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CHILDREN'S CONNECTEDNESS TO NATURE AND PARENTAL INFLUENCE: A
MIXED METHODS SURVEY

By

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A capstone submitted in partial fulfillment of the requirements for the degree of Master
of Arts in Education: Natural Science and Environmental Education

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St. Paul, Minnesota

Summer 2018

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CHAPTER ONE

INTRODUCTION

The first chapter of my capstone will introduce the topic I will study and provide background information on my personal journey that led me to the topic. I will share my childhood upbringing, educational background and professional development that inspire and motivate me to look deeper into the topic of children's connectedness to nature and parental involvement. Specifically, I will more closely examine identity development, including the formation of attitude and ethic, the cognitive psychology and nature experience, parents' role in environmental education and the relevancy of all these topics in young children. I will conduct a mixed-methods research consisting of two separate surveys to help answer the question: *What are the ways parents positively shape their children's connectedness to nature?* I will administer a quantitative survey for children to measure their connectedness to nature as well as a qualitative survey of parents to gather in-depth information to capture the richness of the nature experience that happens at home. These surveys will help me arrive at a better understanding of children's connectedness to nature and parental involvement.

Introduction

When deciding on a capstone topic, I wanted to pick something that I am passionate about as well as something that is comprehensive, applicable to my future endeavors and beneficial for my students that I will work with. I had just finished reading *The Last Child in the Woods* by Richard Louv (2005). The book focused on the divide between children and the outdoors. I thought about my own life, mainly my childhood, in comparison with the children I work with. I loved my childhood, being outside and want

to share the joy I have for the outdoors with the children I teach. When I was young, I spent all my time outside and never felt tempted by electronics. Today, many children spend their time inside consumed by a screen. I see the children I work with constantly talking about the latest video game, TV show, movie, and iPhone app and Internet trend. I want to flip the conversation and have children talk more about the tree house they built, the bugs they discovered or just being outside in general.

Experiences in Youth

I grew up in a suburb of a large Midwestern city in the late 1990s. When I was younger I spent the majority of my time outside, digging in the garden with my mom, fishing off the dock with my dad, turtle hunting, climbing trees, building forts or going to the beach. The possibilities outside were virtually endless. As a child, I was able to create, invent and imagine a different world. Playing inside did not seem exciting to me because it felt confined. As a family, we went on camping trips all over Minnesota, the Dakotas and Wisconsin. Those trips were the most appealing to me and something I looked forward to. Even as an adult, some of my most cherished family memories are from those camping trips. I feel this time spent outdoors made my brother and I extremely close. Being as we are four years apart, it gave us something to share together and have in common. I vividly remember going rock hopping, climbing, hiking, swimming in the creek and spending time around the fire with our parents. I credit my love of the outdoors to them. There are countless pictures of me in a baby carrier, strapped to my dad as he crosses a river with my brother in tow or my brother and me sitting atop rocks in the middle of the forest. My dad always tells me stories about when he was younger how he and his brothers would walk down the trail to go fishing for

hours on end or how they would ride their bikes to the General Store to eat candy before dinner. The simplicity is near perfect. In fact, one of my parents' first dates was a fly fishing trip. Growing up, my family was so outdoorsy, I was potty-trained in the vestibule of a tent in White Water State Park. Richard Louv states in his book, *The Last Child in the Woods* (2005), that "nature presents the young with something so much greater than they are; it offers an environment where they can easily contemplate infinity and eternity" (p. 85). At a young age, I never would have imagined how those experiences would contribute to the environmental ethic I have as an adult.

Experiences in School

I started to intertwine my personal interest of the natural world into my scholarly interest in the 8th grade. The one thing that sticks out in my mind is my 8th grade geology unit. If memory serves me right, we had to examine a handful of rocks and determine if they were sedimentary, metamorphic or igneous. I cannot pinpoint exactly what it was that was so captivating about it, but I remember quickly becoming obsessed with identifying rocks. It was not until I was a senior in high school that I discovered I could make a career out of my love for nature. My senior year, I took an introductory course on environmental science and my teacher reminded me very much of Ms. Frizzle from *The Magic School Bus*. She was quirky and wore brightly colored outfits with earrings to match! She made learning exciting, interactive and fun. She was my first outside influence to environmental science. While as a child I enjoyed spending time outside, I wasn't aware of the intense interest I had for the outdoor world. I needed an outside force to help bring those interests to light. I will admit that in high school, I had very little interest in what I was learning and was simply going through the motions. This

environmental science class changed my views on education, learning and turned me onto my interests. I entered my freshman year of college in the fall of 2010 at a state school about an hour south of the Metro. I declared a major in environmental science and graduated with my Bachelor's of Science in the fall of 2014. I knew that a career in environmental science would allow me the ability to influence and inspire children on a day to day basis just like my personal Ms. Frizzle did for me. I not only had the degree but the passion to help drive my career. I have learned that environmental education extends beyond the classroom and involves active participation within the community, sense of awareness and critical thinking skills. Through my experience in school, my internship, jobs and personal beliefs, I have created a strong environmental philosophy of "learn by doing." The classroom is a wonderful place for consuming knowledge, but by actively participating in learning, I believe that children start to build on the things that reflect their interests and gain practical experience in the real world that becomes applicable to all aspects of life.

Experiences in Work

An experience that sticks out in my mind was during my internship at the Santa Fe Botanical Garden in New Mexico. One of my projects was working with a group of high school students who came from a very poor community that had seemingly no escape. We worked at the Georgia O'Keeffe House to restore her garden into a vegetable garden to later be bought and consumed by the public. The Georgia O'Keeffe house sits on top of a hill that overlooks the rolling *arroyos* (Spanish for hills). For miles, the eyes can see the copper and red rock canyons with the backdrop of a clear blue sky. It is no surprise to see where Ms. O'Keeffe found her inspiration. While working at her house,

there was an overwhelming sense of serenity and excellence. Her appreciation of nature is reflected in many of her paintings as well as her lifestyle. Part of me felt it was my job to portray her environmental stewardship through replanting her garden. While working with the kids, I wanted them to be able to grasp the opportunity. Georgia O'Keefe in some ways was an environmental pioneer which is depicted through her artwork. In my opinion, her artwork is amazing. It would be a crime not to plant an equally amazing garden to honor her and her work. As a future environmental educator, I needed to be a Ms. Frizzle and connect the past with the present and make learning fun. With this thought heavy on my shoulders, I was a bit nervous that I would be working with kids who had no motivation or appreciation of the natural world, but I was proven wrong. The group was so eager to begin working, sharing their thoughts and personal stories. I worked with the kids for one week, and as I learned more about their interests and dreams, I came to know that they were a very hard working, passionate group of young adults. It was clear to see that they felt a deep sense of place atop that hill. The kids had no trouble making me feel welcomed. I quickly became a part of their community (which was comforting being so far from home). In return, I helped these children foster skills they already had but did not know how to use. It was a rewarding job but left me wondering why these children had a strong connection to the environment and what influenced them to be environmental stewards at a young age. In this paper, I will look at the topic of connectedness to nature and the role of parental influence.

Summary

According to Brennan and Lo (2002), environmental ethic is defined as “the discipline in philosophy that studies the moral relationship of human beings to, and also

the value and moral status of, the environment and its non-human contents” (p. 1). In other words, what, if any, moral obligation do humans have to the preservation and care for the non-human world? Being raised in a family that valued nature and everything it has to offer helped me immensely to develop a strong ethic reflected in my everyday lifestyle; perhaps the most pertinent being dedicating my future career to advocating and educating others about the environment. I wonder, if I was not raised in a family with a strong environmental ethic, would I still be on the same career path or have the same daily habits? There is a national phenomenon on the disconnect between children and the natural world. Author Richard Louv coined the term “nature deficit disorder” in his book titled *The Last Child in the Woods* (2005). In the book, Louv defines the term nature deficit disorder as a lack of intimacy (closeness or confidence) with nature. According to Louv (2005), “the less time children spend in their natural surroundings, the more they narrow their senses which in return reduces the richness of human experiences” (p. 3). Exposure to nature is a form of therapy which inspires creativity, freedom, fantasy, privacy in children and includes stimulation of full senses (Louv, 2004, pg. 7). In nature, children are forced to use their minds to create their own games, activities or fantasy world. With an increase in temptation of electronics, children are spending less of their time outside and becoming increasingly disconnected from nature.

This capstone will take a closer look into the connectedness children feel to nature. Additionally, I will explore the role of parental influence. I will use a mixed-method approach to help collect data and measure the connectedness a child feels to the outdoors as well as gather data about depth of nature experience that happens at home. The mixed-method approach will help eliminate any bias or weakness found in either

individual method. Collectively, I will be able to gather information to help answer the question: *What are ways parents positively shape their children's connectedness to nature?* Chapter Two will examine what literature and research currently exists on the topic of child development and the natural world.

CHAPTER TWO

REVIEW OF LITERATURE

Chapter Two outlines the literature that already exists relating to the research question: *what are ways parents positively shape their children's connectedness to nature?* Each section will more closely examine identity development, including the formation of attitude and ethic, the cognitive psychology and nature experience and the role that caretakers play in environmental education. Additionally, the topic of becoming disconnected from nature will be examined through growing health concerns and environmental issues we are currently facing.

Identity Development

The social, psychological and political sciences widely use the theory of socialization when studying general processes of identity development. According to Maccoby (2007), the focus of socialization refers to the “processes by which young people are taught the necessary skills, values and behavioral patterns to become a well-functioning member of a social group and the culture in which they live.” The socialization theory (Maccoby, 2007) speculates that in early childhood the family is the strongest socialization agent but there are many external agents (e.g. media, peers and school curricula). These external agents may contribute to inconsistencies with the influences of family. Parents and children have similar attitudes because each individual in the family is exposed to the same social and biological influences. Martha Farrell Erickson, a developmental psychologist and founding director of the Children, Youth and Family Consortium at the University of Minnesota states, “Building gradually and slowly

over the first year of a child's life, the parent-infant attachment is a child's first close relationship [and] a model for all relationships that follow" (Louv, 2004, pg. 4).

Another theory that is closely looked at while examining the development of identity is the attachment theory. Attachment theory is an ideology that was first brought up in the late 60's by John Bowlby. This is a theory that childhood development depends upon a child's ability to form a strong relationship with at least one primary caregiver (Brodie, n.d., para 2). This strong attachment is necessary in forming a sense of security and stability. Often times, children who create a strong attachment to a parent are more adventurous and eager to have new experiences. Such strong bonds have the potential to create a wealth of trust and communication. The attachment theory can also be used to approach a child's relationship with nature. Children's early experiences in nature influence the child's long-term comfort and respect for the natural world with comfort and respect being the concepts that are central to the study of parent-child attachment (Louv, 2005, p. 158).

As stated by Eagly and Chaiken (1993), environmental attitude is defined as "being based on values, composed of beliefs and effects toward the environment and nature." A study conducted by Lappanen et. al (2012) looks at the parent-child similarity in environmental attitudes. The study was conducted in Finland, using a group of 237 15-year old students and their parents (n=212) (pg. 162). The study found a significant, positive correlation between environmental attitudes in children and their parents. These results contribute some findings to the growing field of analysis into environmental socialization and significant life experiences (SLE) that concern the environmental field.

Significant life experience research suggests that the presence of role models, time outdoors, and nature-related media foster positive environmental behavior. Since the 1980s, the importance of the family promoting a pro-environmentally active community is outlined in the SLE approach as discussed by Tanner (1980). First initiated by Tanner (1980), SLE is based on “narrative studies of identity which focuses on a single individual and how they integrate life experiences rather than the understanding of isolated values, accomplishments or other personality features.” In previous SLE research, when an individual explains their developmental influences that have helped foster their environmental attitudes and sensitivity to action, a similar set of responses reoccurs within those individuals: extended time spent outdoors in natural areas (often in childhood), family, involvement in environmental organizations, books, nature films and the loss of a beloved natural place (Chawla, 1998, pg. 373). By focusing on a single individual, their significant life experiences help gain a deep insight into the processes of identity development that later might be tested across broader samples of individuals.

A similar study conducted by Stevenson et. al (2014) supports the SLE research that was initiated by Tanner (1980) and pursued by several others (e.g., Chawla, 1990; Corcoran, 1999). Based on a random sample of middle school students in North Carolina (USA), it was found that influential outdoor experiences as a child, adult role models, and reading nature books are all important factors that lead to an environmentally active adulthood (Stevenson et. al, 2014). Much of a youth’s development stems from their significant life experiences which occurs while they are young. The next sections will examine further the process of forming attitude and ethics based off of significant life experiences.

Attitude

Attitude contributes to our personality and the development of identity. It also attracts the type of people we keep in our social circle which can influence our views and morals of the world. An attitude is “a relatively permanent organization of beliefs, feelings, and behavioral tendencies towards socially significant objects, groups, events or symbols” (Hogg & Vaughn 2005, p.150). Attitudes can be behavioral (influences the way we act) or cognitive (involving a person’s belief or knowledge) or involve an individual’s feelings and emotions. Attitudes help give individuals a sense of control and ability to organize and structure certain experiences (McLeod 2014, para. 13).

Psychologists describe attitudes as being learned inclinations. Personal experience and observation contribute to the development of attitude. The formation of attitude is also influenced by social roles and norms. Dr. Richard W. Scholl, a professor of the University of Rhode Island, states that attitudes are the “mental folders” where attitude objects (perceptions, beliefs, feelings and expectations about the environments) are stored (McLeod, 2014). According to Cherry (2016), “Attitudes are maintained in the absence of cognitive dissonance, a state of psychological stress caused by inconsistent thoughts” (para. 15). Therefore, a person’s later exposure to the same experience and environment that established an attitude is therefore more likely to reinforce the attitude than to change it.

Ethics

Ethics also falls into the formation of identity development and influences our views of the world. Ethics refers to “the standards of right and wrong that prescribe what humans should do in terms of obligations, benefits to society, fairness or specific virtues”

(Velasquez et al. 2015, para. 8). Ethical standards also include “those that enjoin virtues of honesty, compassion, and loyalty” (Velasquez et al. 2015, para 9). According to Velasquez et al. (2015), ethical standards include “principles relating to rights, such as the right to life, the right to freedom from injury, and the right to privacy” (para. 8). Such standards are adequate values of ethics because they are supported by consistent and well-founded reasons.

Head (2006) found that “an individual’s ethic stems from a range of sources such as an individual’s childhood upbringing, life experiences, religious beliefs, and discussion with others” (para. 5). Children learn from their parents both in their words and through their actions. These teachings shape most of the fundamental attitudes about what is right and what is wrong. An individual’s later life experiences are events that are more direct and very personal. Religion can fall into the personal life experiences and also have a considerable impact on an individual’s views of the world. Religion can emphasize honesty, respect for others and their rights and selflessness. The discussions that we experience with others on a day-to-day basis have an impact on our ethic as well. Over time, the discussions lead each of us to a sense of what the people around us consider good or bad, ethical or unethical. Most of us tend to go along with the opinions of those around us instead of independently evaluating the ethical aspect of others’ actions. Our personal views and morals are constantly changing as we evolve from children to teens to young adults to working adults. However, the roots of our ethics start at a young age through family.

Environmental Ethic

Environmental ethic is defined as “the discipline in philosophy that studies the moral relationship of human beings to, and also the value and moral status of, the environment and its non-human contents” (Brennan and Lo 2002, p. 1). Environmental ethics developed into a specific philosophical discipline in the 1970s but has been written about throughout history. According to Cochrane (n.d.), the emergence of environmental ethics was due to the increasing awareness in the 1960s of the effects of technology, industry, economic expansion and population growth and what it means for the natural world. This rise in awareness came from the publication of Rachel Carson’s *Silent Spring* (1962) which alerted readers to the widespread use of chemical pesticides and the serious threat they posed to public health and the destruction of wildlife (Cochrane, n.d.) Paul Ehrlich’s book *The Population Bomb* (1968) also raised awareness of the devastating effects of a growing population for the Earth’s resources (Cochrane, n.d.). Environmental ethics must address the following question: What duties do humans have with respect to the environment, if any, and why?

E.O. Wilson, a Harvard University myrmecologist (an individual who studies ants) and conservationist, popularized the term biophilia. According to Kellert and Wilson (1993), “biophilia is the innately emotional affiliation of human beings to other living organisms” (p. 31). Human beings were once hunter gatherers who formed a close connection with nature as they hunted and lived off the land. Eventually, the agricultural era came about where humans were raising livestock and planting crops. While still dependent on nature, there was a slight disturbance in the natural flow of things as there was diminishing biodiversity and an increase in competition between native plants and

animals. As societies, we gradually become disconnected from nature and out of touch with our roots.

Historian Lynn White (1967), summarizes that the roots of the environmental crisis stem from Judeo-Christian thinking that encouraged the overexploitation of nature by maintaining the superiority of humans over all other forms of life on earth in *The Historical Roots of Our Ecological Crisis*. According to White (1967), the Judeo-Christian idea that “humans are created in the image of the transcendent supernatural God who radically separates humans from nature” (p. 5). This ideology further opened the way for the exploitation of nature.

Significant life experiences contribute to the development of identity along with ethic and attitude. Attitude is very much a part of our personality and who we are. It plays a big role in shaping how we view the world and our behaviors toward it. A shift in attitude and environmental ethic has disconnected us from our deep roots to nature. The following section outlines the cognitive psychology and the nature experience.

Cognitive Psychology and Nature Experience

The ability for a child to explore, express and create on their own is vital for healthy development. The nature experience occurs when perceived phenomena in nature form the significant content of an experience that may be otherwise known as an “a-ha” experience (Morse, 2011). Each individual's experience is unique. According to Zylstra (2014), nature experiences can be “triggered through a physical encounter with wildlife or a more symbolic phenomena (patterns, signs, metaphor, and visions) perceived in nature” (pg. 81). The nature experience likely involves a heightened state of awareness with sensory arousal, emotional intensity or shifts in the normal perception commonly

reported (Zylstra, 2014, pg. 83). A sense of connection may be perceived, felt or intuited with the non-human other (plants or animals). It seems that nature stimulates humans not only because of a perceived mystery or purity but also because it offers a mix of physical traits, social-cultural forces and symbolism that interplays with an individual's psychology (Zylstra, 2011, pg. 84). According to Zylstra (2011), "place is considered to be a spatial location which mediates an individual's experience and gains value by the meanings ascribed to it" (p. 88). Meaningful experiences in nature create a sense of place for some individuals.

It is argued that informal science education can offer opportunities for learners to engage in science in ways that are relevant, rewarding and enjoyable. A study conducted by Kelly Riedinger (2015) looks at the identification of development of youth during their participation at an informal science education camp. The theoretical framework for her study builds on the ideas of situated and distributed cognition as well as sociocultural perspectives on learning. Riedinger (2015) suggests that these theories are perceived from the notion that learning is socially facilitated and context is specific; as to say that "cognition and knowledge are not confined to an individual but rather are socially shared and distributed across individuals" (p. 456). This theory assumes that all children process and retain information the same. Riedinger (2015) found that the youth in her case study "illustrated how the identity as learners of science developed during learning conversations that transpired during their science camp experience" (p. 458). Her study supports the concept that youth's perceptions of self in science were framed by the specific constraints (rules and norms) of formal science learning. The memorization of

facts to answer test questions fits into this norm. Informal science allowed youth to renegotiate social dynamics and roles within their social groups (Riedinger, 2015).

Another study, relevant to cognitive psychology in relation to the natural world, was conducted by David Strayer (Williams, 2015); a cognitive psychologist at the University of Utah who specializes in attention. The study he conducted was entitled “The Three Day Effect.” His hypothesis was that being in nature allows the prefrontal cortex (the brain’s command center) to dial down and rest. His hypothesis stems from the ideology that “our brains are not tireless three-pound machines; they are easily fatigued” (Williams 2015, para. 3). When we slow down, stop the busywork, and take in the beautiful natural surroundings, not only do we feel restored, but our mental performance improves as well. Strayer’s subjects were 22 of his psychology graduate students who went on a three day backpacking trip. On the trip his students were hooked up to a portable EEG; a device that records brain waves. Throughout the backpacking trip, his test subjects completed creative problem solving tasks which were also being completed by people who were inside, at their desks at work. The study found that the psychology students performed significantly better than people working inside. The overall study shows that being in nature and being in the moment lowers stress which allows individuals to feel rejuvenated and relaxed. Multiple studies have showcased the positive effects of nature exposure.

A study in Telemark, Norway examined the effects of different outdoor play settings on children’s motor coordination in kindergarten. This study showed that “children who used a forest as a play setting performed better in motor skills tests than children who used a standard playground” (Strife & Downey 2009, p. 7). A similar study

conducted by Grahn et al. (1997) found that in urban Sweden, children attending daycare surrounded by natural areas had greater attention capacities and motor coordination than the children who attended daycare centers in the city. A longitudinal study that examined the effects of green residential settings on minority and low-income children found that “cognitive functioning with regard to attention capacities greatly improved when children moved to housing that had more nearby green space” (Strife & Downey, 2009, p. 7). These studies serve as evidence that nature exposure can improve cognitive functioning, better motor coordination, reduced stress levels, increased social interaction and critical thinking skills.

Many of nature’s famous pioneers can easily recall experiences in nature during their childhood that have become rooted deep within them and helped develop their identity and careers. At the age of two, Jane Goodall slept with earthworms under her pillow. John Muir described reveling in the wonderful wildness around his boyhood home in Wisconsin. E.O. Wilson was ignited while exploring the woods and swamps, forming the habit of quietude and concentration (Louv, 2005). Famous photographer Ansel Adams is an excellent example of a child with a case of the wiggles, which today we call an attention disorder, who was submersed in nature and found his passion. Growing up, Ansel could not sit still and his parents kept encouraging him to play outside. Through outdoor play, he found a passion in photography and grew into a very talented photographer. Not everyone who has childhood experiences turns into a nature pioneer. Only in some children these experiences are so intense that they burn themselves into memory to animate adult life.

Louise Chawla, an environmental psychologist, looks at the notion of ecstatic moments. These are meaningful images that include all five senses to create an integration with nature. These moments require space, freedom, discovery and a place to harvest creativity. Bernard Berenson, an art critic, theorized that “creativity beings with the natural genius of childhood and the spirit of place” (Louv, 2005, p. 86). Robin Moore, an expert in design of play and learning environments, agreed with Berenson’s theory. Moore said, “Natural settings are essential for healthy child development because they stimulate all the senses and integrate informal play with formal learning” (Louv, 2005, p. 86).

Nature offers children a multisensory experience that builds upon the cognitive concepts necessary to stimulate imagination by giving the child free space and limitless materials. Nature space and materials serve as a medium of inventiveness and creativity. Cambridge architect Simon Nicholson has the belief that everyone has a creative gene but modern society suppresses the creative instinct. Nicholson’s ‘Theory of Loose Parts’ can be summed up this way: “In any environment, both the degree of inventiveness and creativity, and the possibility of discovery, are directly proportional to the number and kind of variables in it” (Louv, 2005, p. 87). A loose-part toy is open ended. Children can use it in many ways and combine it with other loose-part toys through imagination and creativity. Examples in the natural world might include water, trees, bushes, flowers, long grasses or rocks. According to Louv (2005), some might “argue that a computer, with its near infinite coding possibilities, is history’s deepest box of loose parts. However, binary code, made of two parts (1 and 0) has its limits” (p.87). Nature excites all the senses and remains the richest source of loose parts.

Direct experiences with nature can decrease stress and calm nerves, which in return can aid in sleep and relaxation. Nature exposure can also build confidence, self-awareness and social interactions which can increase the value of human experience. Learning in nature can also help children build critical thinking skills and let children discover and build their expertise to center around their own interests, which can create a sense of empowerment and a confident voice for the future. Moreover, nature provides children the opportunity to exercise their creativity and imagination which helps them emerge as leaders among their peers. The next section will define environmental education and outline the role that an education institution can have in enhancing the nature experience in youth.

Environmental Education

Environmental education is a key component in problem solving from a philosophical basis of holism, sustainability, enhancement, and stewardship. According to cultural historian Thomas Berry (1998), “Teaching children about the natural world should be treated as one of the most important events of their lives” (p. 131). American ecologist Garrett Hardin once said a “citizen of the modern world must be educated to be literate (able to read and write), numerate (able to understand numbers), and ecolate”; which is the ability to understand and use sustainability in the complex environmental systems in which they are a part of (Meadows 1989, para. 1). Environmental education can take place at any age, any level of education and in both formal and informal settings (Tbilisi Declaration, 1977). Environmental education is learning how to manage and improve the relationships between human society and the environment in an integrated and sustainable way (Meadows 1989, para 3). Environmental education can help children

specifically gain experience in the natural world, increase observation skills, understanding, management, ethics, commitment and aesthetics. It is important for individuals to be able to link the natural system to the social system since the two influence and impact each other. Environmental education links the acts of today to the consequences of tomorrow and demonstrates interdependencies among national communities and the need for solidarity among mankind.

It is important for children to form an environmental identity. This identity is used to organize information about one's self in relation to the natural environment. The identity is formed on context and experiences. According to Parsons (2011), in childhood "the development of an environmental identity through experiences can be triggered by multiple short term interventions and experiences in nature" (p.18). Not only is the nature experience vital for individual health benefits, but it also helps children develop the way they care for and protect the environment. Children who feel a strong moral obligation to nature are more likely to pick careers which strive to protect and preserve the natural world (Parsons 2011, p. 18). As discussed previously, parents play a role in influencing children through the attachment theory first discussed by John Bowlby in the late 60's. Caretakers are the ultimate resource for children in the promotion of responsible environmental citizenship; they act as educators, mentors and role models (The Growing Room, n.d.). Teaching opportunities that arise for children also encourage parents to reflect on their own environmental stewardship. Caretakers are able to reflect on their contribution, whether it is positive or negative, to environmental protection and conservancy.

When it comes to environmental stewardship, parents must “walk the walk.” Children learn more by observing what their parents are doing on a day-to-day basis. It is important that parents act as educators to model environmental stewardship in their day-to-day lives. Environmental education is more about the experience and less about the teaching. Parents must also act as facilitators. They should provide their children with opportunities that teach them to act as responsible and engaged environmental citizens. An example of exposure to environmental education opportunities is found in a field study center in The Netherlands. The center is called ‘De Stichting Veldstudie Hei-en Boeicop’ which can be translated into English as ‘The Field Study Foundation at Hei-en Boeicop.’ The center was founded in 1988 by a high school biology teacher from Amsterdam. Hei-en Boeicop is an agricultural village situated in clay and peat between the big rivers of Holland. The field center is multiple buildings that allow students to work and look up the names of the organisms they have collected in the field (Stokes, 2001). There is also an old hay barn that has been transformed so students can take measurements and analysis of soil and water. The buildings also contain a kitchen, library, places to relax and sleeping accommodations for 50 people. More than 20 years after the center was built, it has grown immensely and hired a professional full time staff. The center is unique because it receives no funding from the government or other parties. From the early spring until late autumn about 45 to 60 schools visit the center. The two goals of the center are to “develop an interest in exploring the plant and animal life and all that has contributed to the formation of the landscape and contribute to the personal development of people in relation to nature and the environment” (Stokes, 2001).

Besides this field center, many other countries have created programs (field work or special projects) to help enhance environmental education. These projects are often associated with government funded centers which provide environmental education and resources. An example of this is showcased in Austria. Schools participate in something called the 'eco-schools project.' In this, students take part in school and community based projects such as energy saving, recycling, and plant cultivation. For older students, there are opportunities to take part in eco-holiday jobs which are financed by the Environmental Academy of Upper Austria (Stokes 2001, p. 25). In Finland, schools participate in many international, national and regional projects examining environmental questions (Stokes 2001, p.26). There is also collaboration with local experts and interest groups. Schools take part in local initiatives in Germany where students develop links with local agencies that are involved in environmental management. Projects include action based work or taking action for species preservation (Stokes 2001, p.26). In Portugal, students partake in discovery projects. The project is a collaborative venture of two environmental institutions. Students take part in visits, workshops and environmental activities designed to promote awareness and appreciation of the natural and built environment and its conservation (Stokes 2001, p. 26).

Not only can parents expose their children to opportunities similar to the ones above, but that can also become engaged in environmental education and learn alongside their children. Environmental education is a continuous lifelong process (Tbilisi Declaration, 1977). A study conducted by Damerell et al. (2013), looks at the link of child orientated environmental education and the influence on adult knowledge and household behaviors. This study provides evidence to suggest that the environmental

knowledge of learners is positively influenced by environmental education. The findings demonstrate transfer of environmental knowledge from child to parent, with parents and children sharing activities and conversation (Damerell et al. 2013, p 6). Parents with children that had studied wetland subjects had significantly higher wetland knowledge scores (p 6). This study is unique for environmental education literature in that it uses quantitative data to demonstrate a link from environmental education-induced knowledge acquisition in children through to a desired, conservation linked, and behavioral change at the household level. By illustrating the capacity of environmental education directed at children to modify parental knowledge and behavior this analysis also provides evidence that the decision to educate children or adults need not be mutually exclusive (Damerell et al. 2013, p 7).

Becoming Disconnected

The recent disconnect has caused many concerns within a child's overall well-being that affect the physical, mental and emotional health of a child. This section will review the nature deficit disorder, growing health concerns and how a positive relationship with nature can help decrease the side effects of these health concerns.

The term nature deficit disorder (NDD) was first used by Richard Louv in the book *The Last Child in the Woods* (2005). However, NDD is not an official diagnosis in the International Classification of Diseases and Related Health Problems. According to Driessnack (2009), NDD is a label used to “address the increasing cost to children as they are becoming more deprived of direct contact with nature and the experience of free play outdoors” (p. 73). Louv (2005) summarizes that NDD narrows senses, decreases the richness of human experiences and decreases the ability to connect with others and

oneself. Children being raised in this generation are often called the backseat generation. Louv (2005) states, “For this generation, nature is more an abstraction than a reality. Increasingly, nature is something to watch, to consume, to wear or to ignore” (p. 2). No child will truly know or benefit from nature if the natural world remains behind a screen. According to Driessnack (2009), children between 8 and 18 years of age spend an average of 6.5 hours a day with a screen. Youth are losing their ability to experience the world directly, which in turn contributes to the growing inability of children to relate to others’ life experience. This lack of direct contact is being examined as a potential source of stress, anxiety, depression and other diagnoses in children. The next section will provide an overview of the growing health concerns and how nature can act as a remedy.

Obesity

There are three major health concerns in children that are looked at in Louv’s book: obesity, attention disorders and mental illness. Louv expresses that these problems stem from a lack of connection with the outdoors. The natural world is crucial for youth development and acts as a therapy for children who may be struggling physically, mentally or emotionally. Childhood obesity is perhaps one of the most alarming. A century ago, a larger child would be considered healthy and happy. Today, however, an overweight child is at risk for many other health concerns such as asthma or cardiovascular disease (Dawes, 2014). According to Dawes (2014), there are many factors that contribute to obesity such as fast food, marketing that is targeted at children, and a lack of encouragement for outdoor play. The Center for Disease Control and Prevention found that the amount of TV that children watch directly correlates with measures of their body fat (Louv, 2005). In the United States, children ages 6 to 11 spend

about 30 hours a week looking at a screen (television, camera lenses, computer monitor). Outdoor play is essential for decreasing childhood obesity. It is suggested that children get 60 minutes of physical activity each day. Reading (2007) states that “physical activity reduces weight, strengthens muscles, increases motor skills, and improves mental well-being and social skills.” Not only does outdoor play help an individual’s body physically, but it also helps mentally. Outdoor play can help to relieve stress, calm the nerves, build confidence and self-esteem, and can aid in sleep and relaxation (Reading, 2007).

Attention Deficit Disorder

Another growing concern is attention deficit disorder and other attention disorders. A study conducted by the U.S. Centers for Disease Control estimated that nearly 7.8 percent of U.S. children ages 4-17 are currently diagnosed with either ADD or ADHD (Brown, 2007, p. 22). Previously it was thought that ADD or ADHD was a label for children who just could not sit still in the classroom or could not focus. While these are both characteristics of attention disorders, “specialists are recognizing that this is a much more complex syndrome with impairments in the development of the brain’s cognitive management system” (Brown, 2007, p 23). This disorder also affects an individual’s ability to manage activities such as starting a task, staying alert, remaining focused and managing emotions appropriately. Low levels of dopamine contribute to the impulse and behavior problems found in children with ADHD (Carver, 1998). Norepinephrine is a stress hormone often referred to as our “fight or flight” hormone. The release of this usually gets blood pumping and increases the heart rate when one is in a stressful situation. In children with ADHD, the level of norepinephrine is usually lower than the typical child. This low level contributes to inattention and distractibility (Carver,

1998). Children with attention disorders cannot judge which things in their environment are important and which should be ignored. According to Carver (1998), “A low level of norepinephrine contributes to the difficulty that children have to sustain their focus, plan ahead and understand concepts such as sequence and time.” Understanding what happens in the brain is crucial for helping children with attention disorders or other mental health disorders. Non-formal classrooms play an important role for children with ADD and other attention disorders. Formal classroom settings are not ideal for children with ADD or other attention disorders because it supports the idea that all students learn the same. Children with attention disorders need to move their bodies, feel things and experience their environment. Non-formal classrooms take advantage of all the senses to enhance the learning experience. Relaxed interactions with other students and the instructor ensures that students can touch and see objects, hear language and explore their environment.

Mental Illness

Often times, children with attention disorders have an additional disease or disorder co-occurring with the primary disease or disorder diagnoses such as anxiety or depression. 50 percent of mental illness begin by the age 14. Depression in children is a serious psychological disorder that requires clinical attention. 20 percent of youth ages 13 to 18 live with a mental health condition, 11 percent of youth have a mood disorder and 8 percent of youth have an anxiety disorder (Mental Health by the Numbers, n.d., para. 1). According to Alli (2016), children and young adults who struggle with depression (or another type of mental illness) “may be irritable and angry, have social withdrawal, increased sensitivity and changes in sleep patterns” (para. 3). Children who have depression have a hard time concentrating and participating in school, which causes 50

percent of students age 14 and older with a mental illness to drop out of high school (Mental Health by the Numbers, n.d., para. 3). Similar to attention disorders, there are many neurotransmitter misfires within the brain. Looking at depression specifically, there are many imbalances in the brain with regards to serotonin, norepinephrine, and dopamine. According to Nemade et. al (2007), serotonin is “involved in regulation many important physiological functions such as sleep, aggression, eating, and mood control” (para. 7). In individuals struggling with depression, there is a low production of serotonin. There is also a low production of norepinephrine, which helps bodies recognize and respond to stressful situations (Nemade et. al 2007, para. 8). Nemade et. al (2007) also states that “dopamine plays an important role in regulating our drive to seek out rewards and our ability to obtain a sense of pleasure” (para. 10). Dopamine levels are also low in individuals that struggle with depression. In Louv’s book (2005), the extreme increase in use of psychotropic drugs especially for children is outlined. It is stated that, “new evidence suggests that the need for such medications [psychotropic drugs] is intensified by children’s disconnect from nature” (p. 50). While nature and outdoor play cannot completely eliminate depression or mental illness, nature experiences can relieve some of the everyday pressures that may lead to the diagnosis. According to Tsai et al. (2011), sunlight can increase the number of dopamine receptors and create vitamin D which activates the genes that release dopamine. There are many emotional benefits that come with experience in nature such as social interaction, nurturing solitude and stress reduction. All of the negative impacts from a lack of nature contribute to negative attitude toward the environment since there is no connection to the outside world. Direct

experiences with and in nature increase a child's overall perception and attitude toward nature.

Why it Matters

Becoming disconnected from nature poses many threats to the youth of today. A disconnect includes a growing concern of a child's overall well-being that affects the physical, mental and emotional health of a child. Having an environmental ethic allows individuals to act successfully in daily life on a broad understanding of how people and societies relate to each other and to natural systems, and how they might do so sustainably (Elder, 2007). Experiences in nature assist children in developing a healthy attitude towards nature. This is vital for both the child and the environment. Environmental problems have escalated to the point that many would refer to as a crisis (Zylstra, 2011, p 27). Some of the issues faced are overpopulation, climate change and loss of biodiversity. While there are many ecological trends that contribute to these problems such as declining water, soil and air quality, natural resource availability, degradation and destruction, society is simultaneously confronted with social trends such as rising poverty levels, inequities in standards of living and increased crime (Zylstra, 2011, p 27). The combination of these trends give rise to the convergence of crises. The values and attitudes taught to the children of today are crucial in building the political will for sustainable societies in the next century. Using the environmental education framework discussed earlier in the chapter, we are able to have open discussions with our children about the environment in a proactive and constructive way. The intent of the following sections is to outline some environmental issues we are currently facing in our world today and the effects they have on the environment.

Overpopulation

Many of the other environmental issues that the planet faces come from the fact that we are overpopulating the planet. Overpopulation is where the number of existing humans is greater than the carrying capacity of the Earth. In 1950, the population was 2,555,982,611; in 2016, the population was 7,481,000,000 (Rinkesh, 2017). This means the world population has nearly tripled in the last 60 years. Overpopulation is most apparent in highly populated countries which happen to be low-income and disadvantaged communities where they face the worst environmental problems such as air pollution or toxic emissions (Birch, 2007). An example of overpopulation and its damage to the environment can be seen in the rise of refugees.

According to the United Nations High Commissioner for Refugees: Figures at a Glance (n.d.), there are “21.3 million refugees, half of which are under the age of 18” (para. 1). Refugees are individuals who leave their homes and their countries because they have no other choice. Refugees can be forced to leave behind all their material possessions and homes because of war, persecution (political or religious), natural disasters, environmental crises or poverty. These individuals fear for their own lives, safety or that of their family. For many populations in developing countries, the natural environment is closely linked to economic well-being. Arriving in an alien situation, refugees face hunger, fatigue, humiliation and fear. The first concern they have is to look for food and shelter. According to Shepard (1995), a rise in refugees can “intensify the environmental problems a civilization may already face; especially those associated with over-exploitation of rural natural resources due to poverty, overpopulation, weak rights and nonsufficient management” (para. 1). A major problem is that refugee settlements

usually occur in environmentally sensitive areas. Which is ironic since the majority of environmental campaigns fail to tackle issues of inequality and social justice. It is challenging to engage with issues such as class, race and the inequalities that exists (Birch, 2007). For example, in Africa the refugee camps are large for logistical and political reasons. Many environmental issues that already exist may have a major impact on the individuals in the refugee camps. Low-quality water affects the health of individuals in a place where there is a high risk of infectious diseases multiplying rapidly. Deforestation gradually forces women and children to walk further for wood which in return puts women in risk of physical assault and children miss gaining an education. In many instances, refugees have to sell part of their food rations in order to gain fuel (to cook the remaining food or for heat). This contributes to an increase of malnutrition. Host populations also see a deterioration in the quality of their environment and economy. Since the normally available materials and/or supplies are more in demand with refugees, the prices for fuel and food in the markets rise (Shepherd 1995, para. 4).

The Rwanda Crisis is perhaps the best example of refugees and the environment. During the Rwanda Crisis, people fled to places that held a lot of ecological value. From April 1994 to June 1994 there was a genocide which was the cause of the population displacement. Nearly 2 million individuals fled to camps in the Congo (which was formerly known as Zaire) and neighboring countries (The Rwandan Genocide, 2009, para 6). This was home to a national park. One of the biggest environmental issues the host population faced was deforestation. According to Shepard (1995), it was estimated that “within the first six months tree resources within a 5 kilometer radius had been all but expended” (para 6). Within the next six months, the radius grew to 10 kilometers. During

a refugee crisis in Tanzania from 1994 to 1996, a total of 570 square kilometers of forest were affected. Of that, 167 square kilometers of forest was severely deforested and damaged. An environmental impact assessment was conducted in Zimbabwe in 1994 (after the refugees had returned home) and it showed that there was a 58% loss in woodland cover near the camps (Shepherd 1995, para 7). Some people argue that the impact that refugees has on the environment is not significant enough to raise major concern. The Democratic Republic of Congo experiences a much higher level of habitat loss each year through uncontrolled logging and clearance of land for agricultural purposes. (2,900 and 1,800 square kilometers of forest per year, respectively) (Shepherd, 1995).

It could be argued that environmental changes are the consequence of war and insecurities rather than the triggers for it. An environmental refugee is the term often used to describe the individuals who have fled their homes due to environmental degradation. The term is used to depoliticize the cause of displacement which in return enables states to hold no obligation to provide asylum (Kibreab 1997, p.21). This is because environmental conditions do not constitute a basis for international protection. An example of this is the Horn of Africa. The environmental scarcity that occurs in that region is caused by the degradation of renewable resources which causes violent conflict amongst the inhabitants (Kibreab 1997, p. 22). This increase in insecurity and conflict has compelled people to congregate into safer zones. The increase has also caused a breakdown of long-standing traditional resource management systems, strategies for coping with the historical environmental variables and the resilience of the physical environment. This insecurity and conflict happens most in war-torn societies. It happens

to be a whole chain of effects amongst the state. The insecurity destabilizes the socio-economic environment which undermines the natural resource conservation activities which then increases the loss of family labor (or farming systems). This results in erosion, soil loss and the reduction in productive capacity of available renewable resources. Human activity has the ability to create a domino effect to other environmental issues.

The generation we are raising today is the solution for the future. The more connected these children feel to nature and the better they understand the natural system, the more hope we have for a sustainable future. The next section will present information about climate change and the role it plays in shaping the future.

Climate Change

According to Dunbar (2014), climate change is a “change in the usual weather found in a place. This can range from how much precipitation a place gets in a year or a change in the place’s usual temperature for a month or season” (para. 4). Climate change also refers to the changes in the Earth’s climate. Climate can vary from season to season and place to place. The Earth’s climate is referred to as the combined climates all around the world (Dunbar 2014, para. 4). While climate change is a natural process, humans are a contributing factor in accelerating the process. The greenhouse gas effect is a process in which the Earth is warming because the atmosphere traps heat that is radiating from the Earth. The gases that are becoming trapped in the atmosphere are a direct result from human activity. According to Rinkesh (2016), “these gases include water vapor, carbon dioxide, methane, CFCs (chlorofluorocarbons) and nitrous oxide” (para. 4-7). These gases are a result of our everyday activities like driving a car, livestock, using hairspray

or the use of fertilizers. As mentioned above, there are also natural factors that play a role in climate change. These include sulfur dioxide, ocean currents, solar radiation and orbital changes (Rinkesh 2016, para 8-11). The combined natural factors and man-made factors have detrimental effects on the environment. Some of the most noticeable effects are changes in rainfall which in return increase the number of floods, drought and hurricanes (Rinkesh, 2016). Another noticeable effect are the melting ice caps. This causes a huge shift in the arctic ecosystems; animals lose habitat and eventually die and the food chain becomes broken. Melting ice caps also raise the sea level, which will affect coastal cities such as Miami, FL, New York City and New Orleans, LA and other cities all over the world. Other effects of climate change include wildfires, heatwaves, and loss of wildlife, high temperatures and extreme weather events. An overwhelming majority of climate scientists believe that human activities are currently affecting the climate and that the tipping point has already been passed. In other words, it is too late to undo the damage that climate change has done to the environment. The option we have is to regulate further impact. Because of this increase in temperature, there is an immediate threat to loss of habitats and the wildlife that lives in them.

While the effects of climate change are irreversible, there is opportunity to teach this generation of the value and importance of the natural world and the role they play in the future. The next section will examine the effects of loss of biodiversity.

Loss of Biodiversity

Biodiversity is defined as the number, variety and variability of living organisms that we find on our planet. There are many benefits that biodiversity contributes to the human population such as food security, clean water, and genetic variability. Biodiversity

helps to regulate climate, disease and pollination. Biodiversity also gives humans a place for community because it provides recreation and aesthetics to a variety of different people. This is to say that biodiversity plays a huge role in being able to intertwine the natural system with the social system. The current loss of biodiversity is also being named “The Sixth Extinction.” The Sixth Extinction is unique because it will be the first extinction that has a biotic cause versus a physical cause. Humans are causing vast physical changes on the planet such as transformation in landscape, overexploitation of species, pollution and introduction of alien species (Eldredge, 2001, p. 2). According to Eldredge (2001, p. 2), the Sixth Extinction can be split into two discrete phases. Phase I began when the first modern humans began to disperse to different parts of the world (100,000 years ago). Phase II began about 10,000 years ago when humans turned to agriculture. During phase II, humans disrupted ecosystems by overhunting species that never had contact with humans before. The Sixth Extinction carries on because humans did not have to interact with other species for survival nor did they have to adhere to the ecosystem’s carrying capacity (Eldredge 2001, p. 3). Conservation measures, sustainable development and stabilization of human population offer hope that the Sixth Extinction will not develop to the extent of the third global extinction which wiped out nearly 90% of the world’s species (Eldredge, 200, p. 4).

Summary

Political theorist John H. Schaar (1981) said, “The future is not some place we are going to, but one we are creating. The paths are not to be found, but made. And the activity of making them changes both the maker and the destination” (p. 321). Ultimately, it is the children with the biggest stake in the future who will bear the consequences of

the economic, social and environmental decisions and actions that are currently being made. Davis (1998) states that while the children we care for and engage with in our classrooms are the future, “they need adults (teachers, parents, others) to help them become more concerned with and involved in personal and community decisions about current actions and issues facing the future” (p. 146.) Environmental education, with a goal of ecological sustainability and social justice both within and between generations, is of great importance (Tbilisi Declaration, 1977). The environmentally educated teacher is critical in helping forming children’s attitudes, values and actions toward the environment. Philosopher John Hoyt wrote, “People are often heard to say they are concerned about the kind of world we will leave to our grandchildren, but equally critical is the kind of grandchildren we shall leave to the earth. The values and attitudes communicated to the children and youth of today are crucial in building the political will for sustainable societies in the next century” (Spady 2009, p. 292).

Developing a connection to nature at a young age plays a crucial role in shaping environmentally literate children. The benefits of a connection to nature creates healthy children with positive attitudes and actions toward the environment. This becomes important in the growing concerns of the environment today. Chapter Three will introduce my research method and data analysis that will help answer the question: *What are ways parents positively shape their children’s connectedness to nature?*

CHAPTER THREE

METHODS

Purpose of Research

The purpose of this research is to examine a child's connectedness to nature and the role of parental influence. This is an important topic because there are many growing childhood concerns that have negative effects on the physical, mental and emotional state of a child. This in return can affect their overall well-being and quality of life and quality of Earth itself. Richard Louv has become an expert on the term 'nature deficit disorder' (NDD). This is an unofficial diagnosis that is used to address the increasing harm to children as they are becoming deprived of direct contact with nature and the experience of free play (Driessnack, 2009). The lack of direct contact is being examined as a potential source of stress, anxiety, depression and other diagnoses in children. In Louv's *The Last Child in the Woods* (2005), the three major health concerns that stem from NDD are obesity, attention disorders and mental illness. Many professionals would suggest taking psychotropic drugs (drugs that alter your mind) to help kids and young adults who may struggle with mental illness or attention disorders (Louv, 2005, pg. 50). In Richard Louv's newest book, *Vitamin N* (2016), he reiterates that "experiences in the natural world may reduce the symptoms of attention disorders, serve as a buffer to anxiety and depression, help prevent or reduce obesity, and boost the immune system" (p. xiv). Children need to have meaningful experiences in nature not only to benefit their well-being but also their attitude toward nature. Meaningful experiences in nature can be understood as non-ordinary experiences with and within nature that are particularly

profound or significant (Zylstra, 2014, pg. 82). These experiences involve a sense of connection that may be felt between oneself and something arising in nature (plant, animal, landscape) resulting in an emotional bond. Skelly and Zajicek (1998) found that participation in a garden program and outdoor activities was related to more positive environmental attitudes. Cheng and Monroe (2010) found that among children, time outdoors and perceived family values related to nature are shown to foster pro-environmental attitudes and intention toward pro-environmental behaviors. Although environmental attitudes are seen as contributing to pro-environmental behavior, they have not been shown to directly lead to it unless paired with a deeper ecological understanding (Duerden & Witt, 2010). The parent plays an essential role to promote environmental citizenship in children. Parents act as educators, mentors and role models. As teaching opportunities arise for children, it also encourages parents to reflect on their own environmental citizenship. Having children who are environmentally literate ensures a generation of individuals that have the knowledge to act successfully in everyday life on the spectrum of how the social system and nature system work together in a sustainable way. This study will help better understand the role the parent's play in a child's connectedness to nature.

Research Question

It is important that children are exposed to the natural world at a young age to help better their overall well-being as well as to improve the future of the Earth. Louv (2016) states, "Parent-infant attachment is a child's first close relationship and, to a large extent, a model for all relationships that follow" (p. 4). A parental figure is vital in the

formation of values and morals and helps shape children. The question for my research is: *What are ways parents positively shape their children's connectedness to nature?*

Research Method

I used a mixed-methods approach for my research. Mixed-methods research is an approach involving the combination of quantitative and qualitative data in a research study. The method resides in the idea that all methods have bias and weaknesses and the collection of both quantitative and qualitative data neutralizes the weakness of each form of data (Creswell, 2014, p. 15). My research used a mixed-methods approach that draws a connection between quantitative research through a Likert-type survey and qualitative research through the use of open ended questions using an additional survey. The qualitative data provides context and delivers more complete understanding of the initial quantitative data to help better understand the relationship between the connectedness to nature and the parental influence. Gathering data through both quantitative and qualitative methods enables me to better discover any issues related to bias (Creswell, 2014, p. 21). Both methods allowed me to see multiple perspectives related to the same topic being researched that is which is children's connectedness to nature and the influence of parental involvement. Using a mixed-method approach builds on the "strength that exist between quantitative and qualitative methods to understand a phenomenon more fully than is possible using either method alone" (Mills, 2011, p. 5).

I collected data using the Connectedness to Nature Scale (CNS) survey. I have modified the wording on some of the questions of the CNS survey to help maximize my results. Since children will be participating in the survey, I wanted the wording to be as simplistic as possible. This is a scale developed in 2004 by Mayer and Frantz. It is based

on Aldo Leopold's concept for the land ethic: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise" (Leopold, 1949, p 225). This research functions from the assumption that current state of ecological problems is scientific fact and that it is to the benefit of society to have a population that is more aware of the environment. According to Mayer and Frantz (2004), ecologists argue that feeling connected to nature and caring about nature is a fundamental key in having people adopt positive environmental and ecological behaviors.

The Connectedness to Nature Scale Survey provides a foundation for data collection built on a pre-existing, accepted and tested tool for the evaluation of individuals' trait levels of feeling emotionally connected to the natural world in the realm of social and environmental psychology. The CNS is a fourteen item five point Likert type scale that gathers quantitative data. The CNS survey is one of the most widely used tools for measuring a connection to nature. It has been used around the world and translated into several languages. The CNS consistently predicts self-reported environmentally responsible behavior (ERB) and often explains the relationship that other variables have. It has been shown to predict self-reported environmentally responsible behavior across multiple populations, including college students, children and a general adult population (Mayer & Frantz, 2004, p. 504). The CNS survey consists of a series of fourteen statements about feelings and attitudes an individual may feel toward nature which can be found in Appendix A.

I have developed my own qualitative survey, titled the Nature Experience Survey, to help capture the depth and richness of the nature experiences that are happening at

home. This survey was completed by parents. A qualitative survey establishes a meaningful variation (relevant dimensions and values) within a population (Jansen, 2010). Creswell defines qualitative research as “research that begins with assumptions and the use of interpretive framework that inform the study of research problems addressing the meaning individuals attribute to a social or human problem (Creswell, 2014, p. 44).” There are many characteristics of qualitative research that I used to help build my survey: involvement of multiple methods, complex reasoning going between inductive and deductive, the focus of participants’ multiple perspectives and meanings, involvement in emergent and evolving design, reflective and interpretation of the research’s background influences and the development of a holistic, complex picture (Creswell, 2014, p. 45).

I have collaborated with colleagues to help create meaningful questions to capture answers that fall in line with my research question and follow the framework of connectedness to nature and parental involvement. When creating the survey, I decided to keep my questions open ended, front-load the most important questions and keep my survey short. When creating questions, I continually thought about how I will link the answers to the research question. I have field tested my survey to create a set of test data, revised and re-tested. The survey consists of eight open-ended, short answer questions:

1. Describe some outdoor activities you participate in with your family? (Running, hiking, sports, camping, photography, painting, crafts, nature walks, etc.)
2. People do outdoor activities for a number of reasons. List some reasons why you participate in outdoor activities.
3. How many hours per week do you spend outdoors as a family?

4. Tell me a story of a favorite outdoor memory you have with your family.
5. What do you understand by the phrase “connected to nature”?
6. Describe any barriers that prevent you from spending time in the outdoors.
7. Describe some other activities that you participate in with your family that may not be related to the outdoors.
8. Is there anything else you would like to share?

School Setting and Subjects

For my research, I utilized an elementary school in the suburbs of a large Midwestern city. The elementary school itself consists of 528 K-6 students. This includes three classrooms at each grade level as well as two special education classrooms. The school’s motto is “a caring community” and has an open mind to all cultures and races. The school uses a STEM (science, technology, engineering and math) curriculum that supports the “learn by doing” philosophy. They are also advancing in technology and going to a wireless environment that allows students and teachers to learn and communicate throughout the school. The school supports the environment by becoming more energy efficient, environmentally safe and healthier for children and staff. Communications are paperless, there is recycling and composting throughout the building, and there are new windows and air ventilation system as well as motion sensors for lights. Students also learn in flexible seating classrooms. Flexible seating supports choice, movement, community and comfort in the classroom. Students learn best when they have control of their environment. Students are able to choose where they sit and who they sit with and are able to move throughout the day. According to the district website, the student population throughout the district is 55% Caucasian, 21% African

American, 10% Hispanic, 7% Asian/Pacific Islander, 6% two or more races and 1% American Indian. 37% of students qualify for Free and Reduced Price lunch.

The pool of candidates for my research included fifth grade students as well as their caretakers at home. My pool of candidates included a variety of gender, ethnicity, academic ability and social class.

Typically, students in fifth grade are 10-11 years of age. According to Anderson (2011), there are many social, emotional and intellectual developmental characteristics of fifth graders. Intellectually, children at this age are interested in the present and have limited thoughts of the future. They also start to expand on their interests based off the development of ideals from role models and ability to begin to see worldly perspective (Anderson, 2011). There is a great deal of social and emotional development that takes place at this age. Typically, social and fairness issues start to peak and are able to be solved because of the development of more mature morals (Anderson, 2011, p. 4). Anderson (2011) also states, “10 and 11 year olds naturally feel closer to their family at this age versus any other age” (p. 4). Family time is important to the child at this age. Characteristically, children are more matter of fact, content, balanced, feel unique and are able to verbalize their likes and dislikes more clearly (Anderson, 2011).

Human Subjects Committee

Permission was received prior to the research from the school’s administrator to conduct the survey and all the requirements of Hamline’s Human Subjects Committee will be met. Informed consent letters were signed by guardians of research participant. This allows children to partake in the CNS survey. Participants were assured that published results of the surveys will be kept confidential.

Survey Consent, Collection and Organization

Consent for survey participation is required since my research involves children under the age of 18. Prior to administering any surveys, an online form with the Informed Consent will be emailed to all caretakers at home. Included in the email was a link to the Nature Experience Survey so the caretakers were able to do both the Informed Consent and Nature Experience Survey at the same time if they choose. I will introduce myself and background, the purpose of my research and research question at the beginning of the introductory email. The qualitative data was gathered through an online tool. This tool allows users to submit their answers to me without results being shared publicly. Again, all information was kept confidential in any published writing. A digital survey method allowed participants to answer the questions on their own time and in their own space. I anticipated more participants for the entire process of data collection by using an online method. This survey should take no longer than 15 minutes. I kept the survey open for two weeks to ensure I received responses back in a timely matter. Any responses received after two weeks were omitted from my research. I was able to look at the data as a whole, individually or compile it into a spreadsheet. The information was also available to be printed if need be.

The quantitative data (CNS Survey) was also gathered using the same online tool as the Nature Experience Survey. I attached the CNS survey to the same email as the Nature Experience Survey with easy to follow directions to ensure everything got filled out properly.

Data Analysis

The Connectedness to Nature Scale Survey consists of fourteen questions with a Likert type scale of one through five. This allows for a total of up to 70 points given a child answers 5 (strongly agree) to all the questions. I organized my data into a spreadsheet in preparation for further analysis. I read through the responses to the qualitative surveys to help analyze the data more in-depth based off the open-ended questions.

My qualitative data analysis involved the identification, examination, and interpretation of patterns and themes in textual data. I will then be able to determine how the patterns and themes help answer the research question of: *What are the ways parents positively shape their children's connectedness to nature?* Qualitative data is a fluid and continuous process that is likely to adapt as the study evolves and data emerges (National Science Foundation, 1997). While the qualitative survey will produce a lot of data, it all won't be necessarily meaningful to my research. I reduced and transformed the raw data by determining what is significant by following the framework of connectedness to nature, development of environmental identity and parental involvement. This process of data reduction gave way to identifying meaningful patterns and themes. There are two primary ways that qualitative data is analyzed: content analysis and thematic analysis (National Science Foundation, 1997). Content analysis is carried out by coding the data for certain words or content, identifying their patterns and interpreting their meanings. The coding is done by going through the text, labeling words, phrases and sections of text that relate to the research question. After the data was coded, I was then able to sort and examine the data by code to look for patterns. Thematic analysis is grouping the data into themes that will naturally emerge from the data that will help answer the research

question. Once the themes were identified, I was able to group the data into thematic groups to better analyze the meaning of themes and connect them to the research question as well as the CNS scores. After the qualitative data analysis process, I was able to answer the following questions after both surveys are completed (National Science Foundation, 1997):

1. What patterns/common themes emerge around specific items in the data? How do these patterns shed light on the research question?
2. Are there any deviations from these patterns? What factors could explain these atypical responses?
3. What interesting stories emerge from the data? How can these stories help shed light on the research question?

Once the Nature Experience Surveys are themed and attached to their CNS, I was able to sort the CNS Surveys based off of score (70 to 0).

Summary

There are many growing childhood concerns such as obesity, attention disorders and mental illness that affect a child's physical, mental and emotional health. Richard Louv suggests that these concerns stem from the Nature Deficit Disorder, which is the depravity of direct contact with nature and the experience of free play. In Richard Louv's newest book, *Vitamin N* (2016), he reiterates that "experiences in the natural world may reduce the symptoms of attention disorders, serve as a buffer to anxiety and depression, help prevent or reduce obesity, and boost the immune system" (p. xiv). Children who are environmentally literate have the knowledge to act successfully in the world in regards to the social and natural system working as one.

In order to examine a child's connectedness to nature as well as development of environmental ethic and parental influence in the nature experience, a mixed-method research approach was used. The method resides in the idea that all methods have bias and weaknesses and the collection of both quantitative and qualitative data neutralizes the weakness of each form of data (Creswell, 2014, p. 15). The mixed-method approach uses both quantitative and qualitative data in a sequential pattern. I first collected data in a quantitative, Likert-type survey; then built upon that data with a qualitative survey through open ended questions. Using both the qualitative and quantitative the data ensured that any bias or weakness in either approach became neutralized. This mixed-method approach helped gather data for the research question: *What are the ways parents positively shape their children's connectedness to nature?* I collected data from the child's perspective as well as from the caretaker's perspective to help maximize the results. I looked at the surveys as a whole in addition to a more in-depth manner based off of line items in either survey. I identified, examined, and interpreted patterns and themes in textual data and determined how the patterns and themes help answer the research question.

In Chapter Four, the results of this study are analyzed and patterns among data sets are examined. The data gathered from the CNS survey and Nature Experience Survey are discussed. Finally, the implications of the data, patterns and trends are examined.

CHAPTER FOUR

RESULTS

The purpose of this chapter is to compile and share the results from the surveys prepared as outlined in Chapter Three. Specifically, I will discuss the findings from the Nature Experience Survey and the results from the following sections; activities, time spent outdoors, reasons for participation in outdoor activities, CNS interpretation, barriers and stories. I will also dissect the top quartile and bottom quartile for a more thorough analysis. There will also be a discussion regarding the line items from the CNS Survey.

This study included a total of 32 families. It should be noted that there was a family with two students; therefore, there are 33 Connectedness to Nature Surveys and 32 Nature Experience Surveys. I distributed the survey to 73 families from three fifth grade classrooms. I had a response rate of 43.8%. The ethnicity breakdown of my survey was 87.5% Caucasian, 6.3% Asian and 6.3% more than one race. Both a caretaker at home and his or her children took part in the surveys. I received responses from 100% of the students that I received informed consent from. The approach to my research consisted of a mixed-method survey to collect both qualitative and quantitative data. The study was focused on the following research question: *“What are the ways parents positively shape their children’s connectedness to nature?”*

The modified Connectedness to Nature Scale Surveys were first sorted by overall score to help determine the range and average. A high CNS score indicates an individual feels more connected to nature as they likely answered 4 or 5 (agree or strongly agree respectively) to the questions on the survey. I excluded a question from the Connectedness to Nature Survey analysis due to a typing error on my end. Of the 13

questions, two items have a negative inter-item correlation. I applied reverse scoring to these items to maintain a 5 as the desired outcome which was suggested in the original study done by Mayer & Frantz (2004). With all the questions scored using the same scale, a 'perfect' score would be 65 (scoring 5 on all questions). The range of the surveys is 61 to 39. The average of the CNS surveys is 51.9. This number shows the typical value in this particular set of data.

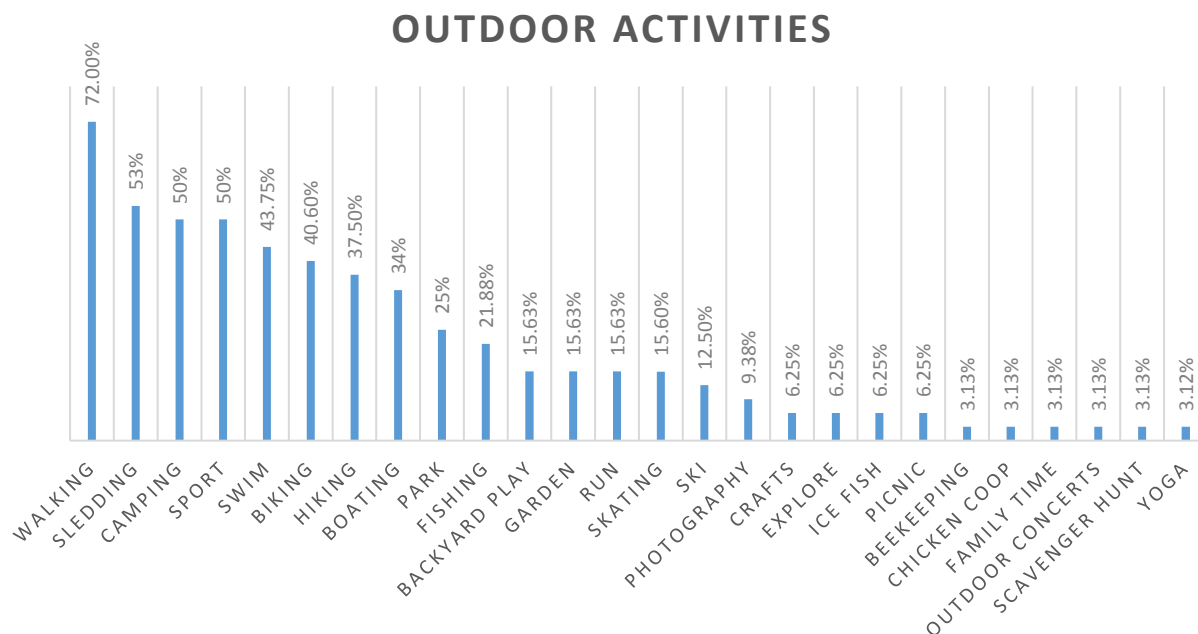
Nature Experience Survey

There were eight short answer questions on the Nature Experience Survey. From those questions, I generated the following subcategories: activities, time spent outdoors, reasons, connected to nature interpretation, barriers, and stories to dissect and discuss.

Activities

There were both indoor and outdoor activities listed on the Nature Experience Survey (NES). Below is a graph that examines the outdoor activities reported by participants of the NES.

Figure 4.1. Outdoor Activities from Nature Experience Survey.



The most popular outdoor activities were walking (72% of responses), sledding (53% of responses), camping (50% of responses) and sports (50% of responses).

Activities with the lowest frequency include beekeeping (3.13% of responses), chicken coop (3.13% of responses), outdoor concerts (3.13% of responses), scavenger hunts (3.13% of responses) and yoga (3.13% of responses).

Since there was a wide range of activities, I developed a descriptive rubric to analyze the activities. A higher activity score indicates more nature-based activities whereas a low activity score indicates activities unrelated to the outdoors. This way, instead of analyzing specific activities, I could focus on the category that the activities falls into based on the following criteria.

Figure 4.2. Criteria for Activities.

ACTIVITY SCORE	CRITERIA
3	Outdoor, nature based activity, individual needs to be outdoors for activity

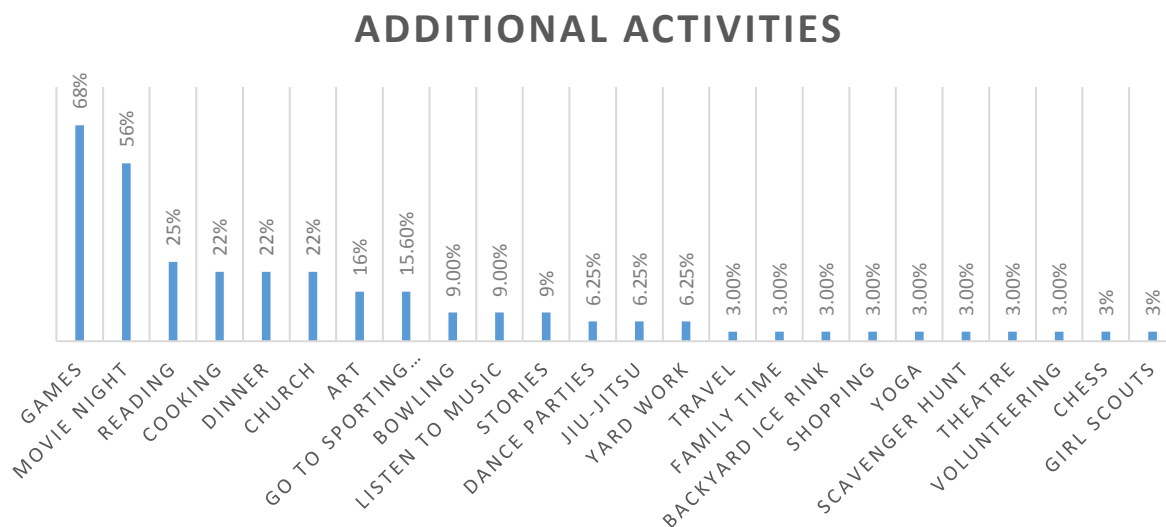
2	Outdoor, not necessarily nature based, individual could participate in activity either indoors or outdoors.
1	Activity does not take place outdoors, not related to nature

I went through each survey and put a number next to each activity listed.

Activities such as camping or hiking received a 3, activities like biking or soccer received a 2 and activities like crafts received a 1. The average activity score for all the surveys was 2.55. There was not much of difference in the types of activities throughout the surveys but the number of activities listed per family varied. For example, some families listed three to four activities and others listed eight to ten activities. Some low CNS scores had activity scores of 2.9 while high CNS scores had activity scores of 2.3 which may indicate that the activity does not matter. However, while looking at the activity score for the top and bottom quartiles, I found the average activity score for the top quarter was 2.64 and for the lower quarter the average was 2.23. I observed there were more nature based activities reported in the top quarter and more sport related activities listed in the bottom quarter which is reflected within the average activity scores.

Another question on the NES was, “Describe some other activities that you participate in with your family that may not be related to the outdoors.” This question is important to my research because it gives insight into how families are spending time together and whether or not that influences a child’s connectedness to nature. All of the surveys listed an additional three to four activities that they participate in that are not dependent on the outdoors as shown in Figure 4.3. The definition of dependent on the outdoors is that one does not have to go to a certain place to participate in outdoor activities.

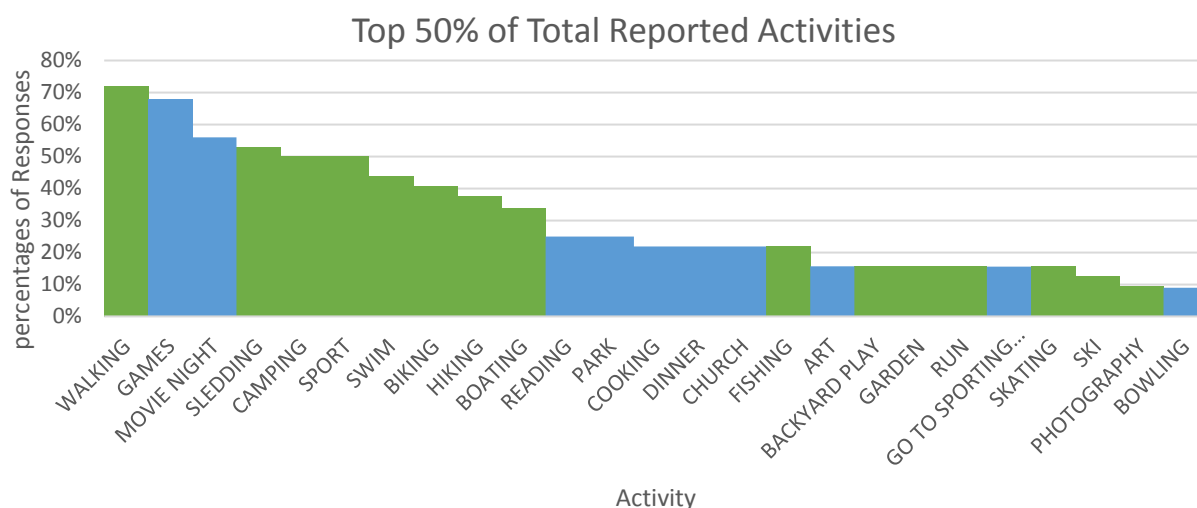
Figure 4.3. Additional activities that are not dependent on the outdoors.



The additional activities listed on the Nature Experience Surveys were widespread across all of the surveys. The most popular were games (68% of responses), movie night (56% of responses) and reading (25% of responses). Activities with lower frequency include volunteering (3% of responses), yoga (3% of responses) and shopping (3% of responses). There are no distinct themes found listed in the additional activities. Families participated in all different types of activities regardless of CNS score.

There was a total of 50 reported activities for both indoor and outdoor. I compiled the top 25 activities into a graph (Figure 4.4) to grasp the spread of indoor and outdoor activities. Green indicates outdoor activities and blue indicates indoor activities.

Figure 4.4. Top 25 Reported Activities for both indoor and outdoor activities



Of the first three activities with the highest percentage, two of those are indoor activities (games with 22 responses and movie night with 18 responses) while the other is an outdoor activity (walking with 23 responses). There is limited information on exactly where these families are walking but individuals reported dog walks, nature walks and hiking. The activity score for all the activities listed is 2.08. 15 of the 25 reported activities are outdoors. The activity score for the outdoor activity is 2.12. This indicates that even though more activities take place outdoors, the activities are not highly focused on nature-based activities. This graph shows that families are not participating in just one specific activity; families are participating in both indoor and outdoor activities.

Time Spent Outdoors

The average number of hours reportedly spent outdoors for all 33 surveys was 9.5 hours per week. That equates to 1.36 hours a day. In the summer, on average families reported spending 10.8 hours outside per week. In the winter, families reported an average of 8.2 hours outdoors. When comparing the top quartile of CNS surveys to hours of time spent outdoors to the bottom quartile of CNS surveys, the average amount of time

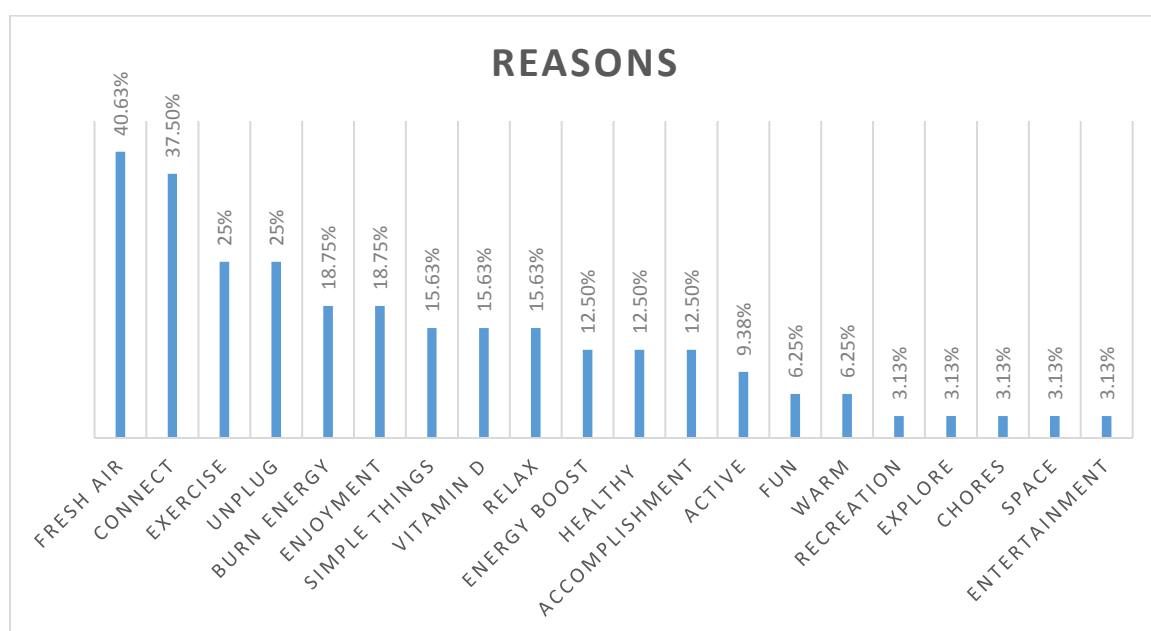
spent outdoors for the top and bottom was 16.25 and 9 respectfully. This data set shows, time outside may be an important factor in creating a closer connection nature.

Reasons

The reasons reported for time spent outdoors were spread out across all surveys.

Figure 4.5 shows a graph of popular words used in the reasons why people spend their time outdoors responses. A complete list of responses can be found in Appendix B.

Figure 4.5. Popular Reasons for Outdoor Activities.



When thinking about the research questions of “*What are the ways that parents positively shape their child’s connectedness to nature?*” I noticed that 12 families responded that a reason they spend their time outdoors is to connect. These 12 families also included a story that took place at an accessible location or a location that specifies a sense of place for these individuals such as cabin trips, learning to ski at the cabin, gardening at home, sitting on the deck, spending time with kids and husband, or bike rides through the neighborhood. This set of surveys also had responses to what connectedness means with answers like “sharing memories,” “learning about the

environment and passing it to children,” “using nature to connect to others (both living and nonliving).”

Another theme I noticed through my research was a sense of accomplishment. 12.5% of people listed feeling a sense of accomplishment as a reason why they spent time outdoors. The accompanying story that outlines overcoming a challenge includes this response, “My daughter thought she couldn't complete the 7-mile hike, but she did it. We were proud of her.” Another wrote, “Her sisters cheered her from the top of the hill, ‘You can do it! You can do it!’ And she made it all the way to the top without giving up! Now, she makes it up every time.” One respondent replies, “We were hiking Mount Washburn in Yellowstone National Park with our 5, 7, & 10 [year old] kids and it was cold, rainy, foggy and difficult! We turned one of the corners and there stood 4 big horn sheep!” One more parent recounts, “Our younger boy is 10 and was the last of the cousins to learn [to ski]. When he finally got up and didn't fall, the cheers could be heard across the water.” These stories recount memories that depict the outdoors as a place for overcoming challenges or feeling a sense of accomplishment. One family reported they participate in outdoor activities to specifically feel accomplished stating, “After we complete a hike we are excited about the accomplishment.” Similarly, that same family also had a story that was related to overcoming an obstacle. There were four surveys that specifically listed accomplishment as a reason why or used the word in their story. The CNS scores of these surveys were 58, 54, 54, and 51, which are higher than the overall CNS average of 51.9.

Connected to Nature Interpretation

This next section is important to my research of child's connectedness to nature and parental involvement because it helps me better understand how parents interpret what “connectedness to nature” means and the influence on their child's CNS score. It

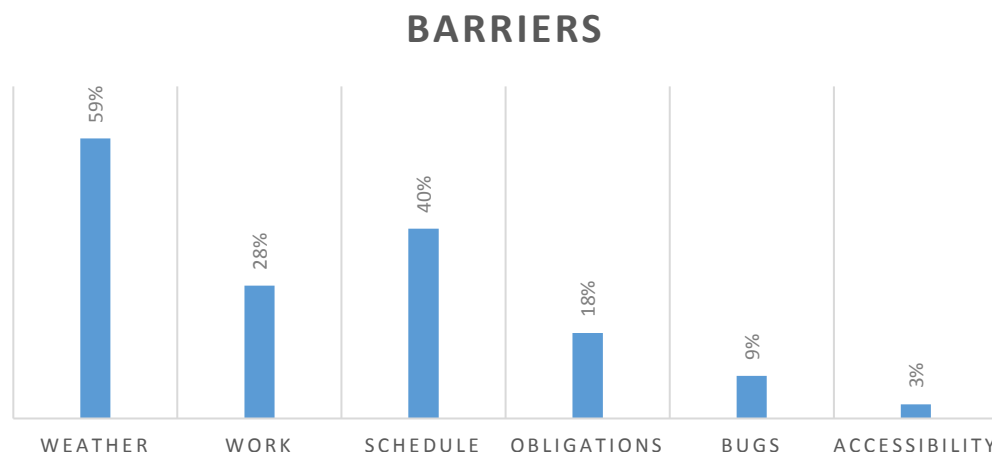
was observed that all participants were able to give an explanation for what “connected to nature” means to them. Some commonalities found were all of the wording was intrapersonal with responses such as, “I think we feel life more deeply when we are outdoors, away from the distractions of electricity.” Or, “not only physical but spiritual, socially and emotionally aware of your surroundings and appreciation of where you live.” Another individual wrote, “Taking some time away from daily routine to look around at what is real.”

There is a theme of words that appear multiple times in the survey for CNS interpretation; 16% of respondents answered appreciation and surrounding, 14% of respondents answered feeling, 11% of respondents answered animals, understanding and connect and 10% of respondents answered beauty and plants. These words come up across all surveys regardless of CNS score. One parent wrote, “Good for the mind, body and spirit.” Another wrote, “Find your inner-self, really be at peace and relaxed in and around nature.” One participant wrote, “Being a part of [nature], care for it, respecting and understanding it.” Someone wrote in their survey, “Connectedness to nature is unique and personal to each individual.” A complete list of answers can be found in Appendix C for interpretations of connected to nature.

Barriers

There was little variety in the responses for barriers. Figure 4.6 shows a table of the barriers that prevent families from participating in outdoor activities reported by participants of the Nature Experience Survey.

Figure 4.6. Barriers that Prevent Outdoor Activity.



The popular barriers listed were weather, work and schedule, which are common barriers that affect everyday life. The biggest environmental barrier reported was the weather, but even then, 55% of families listed winter activities on their surveys. While weather may become too cold (or too hot or too wet) for activities, it does not have a big enough influence to detour parents completely from introducing their children to outdoor activities. One family reported that one of their favorite memories was “riding 4-wheelers through the rain and mud.” There were also 10 families that listed “cold” or “winter” as a barrier while listing some sort of winter activity. I found a connection between barriers and stories, as discussed in the next section.

Stories

All participants had a story they could recall; a complete list of stories can be found in Appendix C. Some common themes from the stories were that they all took place with members of their families and they included a positive memory whether that be a sense of accomplishment or laughter and smiles.

The stories included memories such as “white river rafting the Snake River in Jackson Hole, WY with no wetsuits in 50 degree weather” to hiking Mount Washburn

with kids ages 5, 7 and 10: "It was cold, rainy, foggy and difficult! We turned one of the corners and there stood 4 big horn sheep!" There were also simpler stories such as a family who moved into a house with a very steep driveway. It reads: We had started bike rides after dinner and the oldest daughter would stop halfway up the hill to walk her bike up. One the third night, her sisters stood at the top and cheered her on and she made it all the way up! Another story reads, "A couple summers ago we had an impromptu vow renewal for my aunt and uncle. The flower girl threw lettuce, the altar was an umbrella and the bouquets were made out of weeds!"

While looking at the barriers listed above and reading through the stories, I found that the barriers do not seem to prevent families from enjoying the outdoors. A respondent states, "It was hotter than heck but the kids had good spirits!" when describing a road trip to the Black Hills. Another caretaker recalls a Thanksgiving with snow, "so we all (2 parents, 3 kids) played a version of 'capture the flag' that involved snowballs." Another family listed building snow forts as their favorite memory while a handful of stories are camping trips in the summer. I found eight participants who listed a barrier that contradicted their story. For example, a participant listed cold winter a barrier, but one of their favorite memories was a Thanksgiving Day snowball capture the flag game. Or another family listed "bugs" as a barrier, yet camping was a favorite memory. One more participant states that "weather" is a barrier, but his or her favorite memory includes "hotter than heck" weather.

Top 25% and Bottom 25% Analysis

Because of the wealth of information received, I decided to analyze of the top and bottom quartiles to gather information from both ends of the survey. Figure 4.7 displays a comparison of the analysis.

Figure 4.7. Top 25% and Bottom 25% Comparison with Topics

Topic	Top 8	Bottom 8
AVG CNS	59	44.63
ACTIVITY SCORE	2.64	2.23
AVG HRS/WEEK	16.25	9
REASONS	Enjoyment: 7 out of 8 Exercise: 3 out of 8	Enjoyment: 2 out of 8 Exercise: 8 out of 8
CNS INTERPRETATION	Intra-personal response	Generalized response

When looking at the top quartile, the most popular activities were walking (5 responses) beach/swim (5 responses), and fishing (4 responses). Of those top three activities, two of them scored a 3 based off the criteria in Figure 4.2 (beach/swim and fishing) while walking scored a 2. When looking at the bottom quartile, the most popular activities were camping, sports and walking, all with four responses. Of those top three activities, only one of scored a 3 from the criteria above (camping) while walking and sports score a 2. This observation is important because while looking at the activity score for the top and bottom quartiles, it can be noted that the higher CNS scores are accompanied by a higher activity score. This indicates that there is more nature based activities reported for the top quartile.

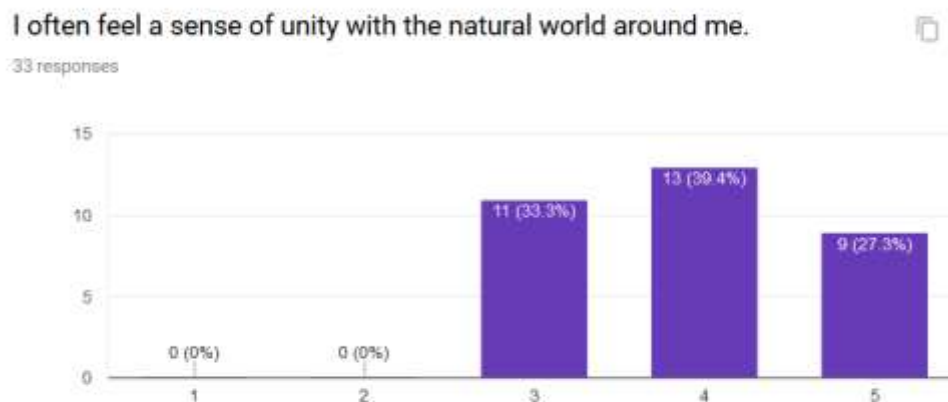
While looking at the reasons that coincides with activity score, a theme of enjoyment versus exercise appeared. I found that in the top quartile, seven participants reported enjoyment as a reason why. In the bottom quartile, only two participants listed enjoyment as a reason why. Similarly, in the top quartile, three respondents listed exercise as a reason why and eight listed exercise in the bottom quartile. The difference in these two reasons (exercise and enjoyment) is that time spent outdoors is dependent on the need to exercise whereas others are spending time outside because they like to.

Furthermore, in the top quartile of CNS surveys more intra-personal interpretations of what connectedness to nature means were reported. For example, one respondent gave the definition of being “physically, emotionally, socially and spiritually aware of surroundings and having an appreciation of where you live.” Another survey from the top grouping recorded, “We need to nurture our nature and that we need nature to live.” Another participant writes, “Desire to be outdoors and share wonderful memories together.” The surveys in the bottom quartile for the most part gave generalized, one worded answers such as “feeling relaxed,” “enjoy simple things” or “spending time outdoors.” While examining word choice used in the answers, I found surveys in the top quartile had a broader range of vocabulary compared to those in the bottom quartile.

Line Items from Connectedness to Nature Scale Survey

There were a few line items that were distinctive in the analysis as they closely mirror a response that indicates a closeness to nature; they are as follows.

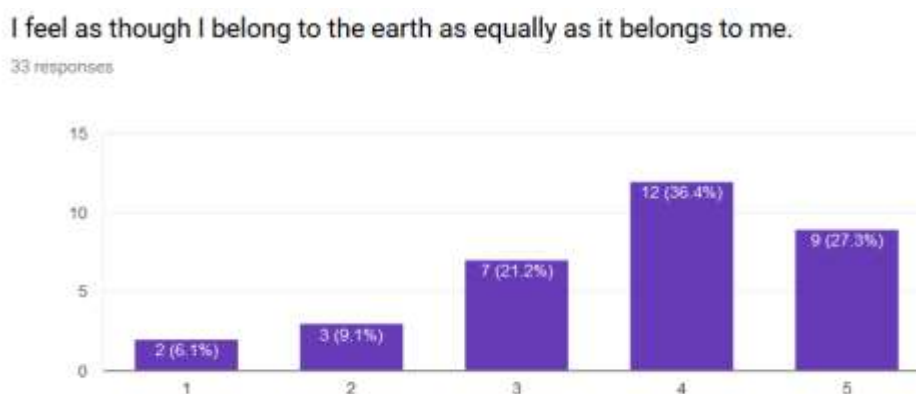
Figure 4.8. Responses from Line Item 1 on CNS.



66.7% of children reported they agree or strongly agree with this statement.

Feeling unity or oneness with something is a good indication one can create a relationship with it or feel close to it. Likewise, the three highest CNS scores all responded 5 (strongly agree) to this line item. When looking at how their parents interpreted what connectedness to nature means, I received the following responses: “not only physical but spiritual, socially, and emotionally aware of your surroundings and appreciation of where you live. Nature is everywhere and we can appreciate it even in an urban environment,” “having a relationship with nature,” “we need to nurture our nature.” Similarly, those same three children answered 5 to the following question:

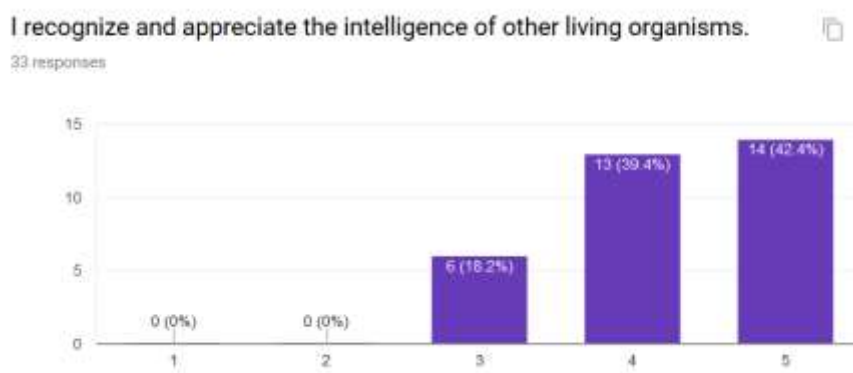
Figure 4.9. Responses from Line Item 7 on CNS.



The children with the top three CNS scores, show strong indication of an understanding of closeness to nature based off these two-line items. As a whole, 63.7% children reported that they agree or strongly agree with this statement. This statement falls in line with a feeling of unity with the natural world; the resources are equally available and shared with both human and non-human life forms. When comparing this line item to line item one (Figure 4.8), the top three kids answered 5 (strongly agree) to both. Comparatively, 50% of children who answered ‘agree (4)’ to “I often feel a sense of

unity with the natural world around me” answered “strongly agree (5)” to “I feel as though I belong to the earth as equally as it belongs to me.”

Figure 4.10. Responses from Line Item 3 on CNS



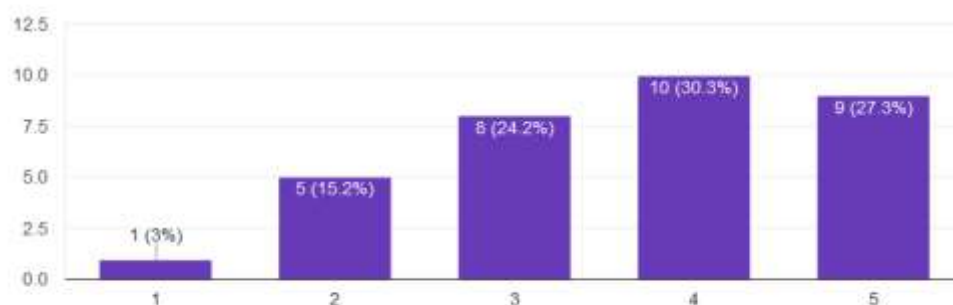
81.8% of children agreed or strongly agreed with this statement. The ability to understand and relate to other life forms is a strong sign of empathy. Similarly, 91% of children reported that they agree or strongly agree with the statement, “I often feel a relationship with animals or plants.” This was the highest rated question on the CNS with an average score of 4.3.

I looked at the first five surveys that answered 5 to line item three. I observed that all surveys had mention of either family time as a reason for outdoor play, memory making through experiences outdoors, or stories that took place close to home such as backyard sprinkler and water balloon fights or water skiing at the cabin.

Figure 4.11. Responses from Line Item 10 on CNS.

I feel that all populations of Earth, human and nonhuman, share a common force that gives us energy and strength.

33 responses



57.6% of children reported that they agree or strongly agree with this statement.

This coincides with the previous line item. Everyone is connected through a common force which helps us be in unison with each other. Looking at line items 7 (Figure 4.9) and 10 (Figure 4.10), I thought about how these families responded to the question “What does connected to nature mean to you?” I looked at both the top 25% and the bottom 25%. I found that the top 25% tended to give more intrapersonal interpretations. For example, one gave the definition of being “physically, emotionally, socially and spiritually aware of surroundings and having an appreciation of where you live.” Another respondent explains, “We need to nurture our nature and that we need nature to live.” On the other hand, the bottom 25% gave more generalized responses as discussed previously. The CNS with the highest score had a parent who left this in the comments section: “My husband and I grew up in an era where there were no cell phones, video games or technology and we ‘grew up’ outside. We encourage and prefer our kids to be outside rather than indoors.” Another high CNS score had a parent say this: “I went to UVM for college and learned a lot about the environment many years ago. I have been able to pass

that understanding on to my kids, which makes me happy.” Both of these families developed their environmental ethic by growing up with it or learning about it later in life and have made it clear that they pass those same ideas down to their children.

The line item with the lowest score was, “I often feel like I am only a small part of the natural world around me, and that I am no more important than the grass on the ground or the birds in the trees” with an average score of 3.06. This question is fairly complex and loaded which may have impacted the answer of the question.

Summary

This research focused on the question, “*What are the ways parents positively shape their children’s connectedness to nature?*” The following is an outline of my research findings by conducting both a qualitative and quantitative survey of how they relate to the research question:

1. Perceived barriers do not act as actual barriers.
2. There is an underlying theme of accomplishment in reasons why families spend time outside.
3. Children are able to demonstrate that they can identify feelings of connectedness and unity through the following line items:
 - i. I often feel a sense of unity with the nature world around me
(66.7% of respondents replied agree or strongly agree)
 - ii. I feel as though I belong to earth as equally as it belongs to me
(63.7% of respondents replied agree or strongly agree)
 - iii. I recognize and appreciate the intelligence of other living organisms (81.8% of respondents replied agree or strongly agree)

- iv. I feel that all populations of Earth, human and nonhuman, share a common force that gives us energy and strength. (57.6% of respondents replied agree or strongly agree)

In Chapter Five, I will share my forward thinking on the above ideas and how this data has influenced my frame of thinking. I will highlight what was learned through the capstone process, revisit the literature review, discuss possible implications and limitations of this study and its findings, give recommendations for future research and reflect on my growth.

CHAPTER FIVE

CONCLUSION

Chapter Five will highlight what was learned through the capstone process, a revisit of the literature review, possible implications and limitations of this study and its findings, recommendations for future research and a reflection of my growth.

What I learned from My Data

There was a wealth of data produced from both of the research surveys. This data helped me come to the conclusion that some ways parents positively shape their child's connectedness to nature are by not allowing barriers to act as barriers, allowing children to feel accomplished outdoors and by allowing children to experience nature to help them identify feelings of connectedness and unity. More in-depth discussion will be found in the following paragraphs.

I found that parents positively shape their children's connectedness to nature by not one particular activity but rather the time that is being spent outdoors. Time in all conditions is shown to be an important factor in shaping a child's connectedness to nature. For example, weather was listed as the top barrier, but 55% of families that listed weather as a barrier also listed winter activities on their surveys. There were stories including rain, mud, cold, fog, and a handful of stories with camping trips in the summer that were noticeably warm. Through these findings, it is learned that parents still enjoy time with their children outside if the weather is unfavorable and fond memories stem from these experiences. This gave me insight as an educator; even if the weather is unfavorable, if I am enthusiastic about getting outdoors the kids will share in that and will have memorable experiences. While looking back at the literature review, I found a study

conducted by Lappanen et. al (2012) that looks at the parent-child similarity in environmental attitudes. The study was conducted in Finland, using a group of 237 15-year old students and their parents (n=212) (pg. 162). The study found a significant, positive parallel between environmental attitudes in children and their parents. While I am not a parent, by being a point of adult contact in their life, I truly have the ability to influence some young minds and form meaningful connections that have a lasting impact through the use of nature.

The nature experience is also enhanced for the children by allowing them to feel accomplished in nature. Many stories depict outdoors as a place for overcoming challenges or feeling a sense of accomplishment (completing a hike with small children, riding bike up a large hill, learning to water ski). These experiences stimulate children to associate the natural world as a positive place as parents encourage their children to participate in outdoor activities and learn new activities. This is similar to the nature experience discussed in the literature review. According to Zylstra (2014), nature experiences can be “triggered through a physical encounter with wildlife or a more symbolic phenomenon (patterns, signs, metaphor, and visions) perceived in nature” (pg. 81). These meaningful experiences in nature create a sense of place for individuals and a closer connection to nature. This encourages me as an educator to help children overcome challenges (whether they are big or small) to allow them to associate the natural world as a positive place.

The data also showed that children have the ability to identify feelings of connectedness and unity. The ability to identify of these feelings indicated a higher

connectedness to nature score. When looking at the top quartile of CNS surveys I found they had the following:

- More time outdoors
- More nature-based activities (higher activity score)
- More enjoyment versus exercise
- Parents with a more intrapersonal interpretation of what connectedness to nature means

The parent plays a role in the child's ability to identify feelings of connectedness by allowing them to experience nature and by having a deeper understanding of what connectedness to nature means to them. I found it intriguing to sit down and think about the perspective of children. I rarely sit down after a program and talk to a child to understand what their viewpoint is on the lesson and whether or not they found it useful or exciting or fun. Understanding children is vital to helping them grow and reach their potential. I work with a diverse group of students throughout the year ranging in age, ability and cultural background. Some I know well since I work with them every day; others I only connect with for a week or two because of seasonal work. This gives me insight as an educator on how to boost a child's connectedness to nature.

Benefits

There were many benefits throughout this process that helped me as both an educator and scholar as well as a couple stakeholders. This research is significant to the elementary school I work at because it opens a conversation about the environment. This allows for brainstorming ideas on how to incorporate more outdoor time into the school day to enhance learning. These open conversations and ideas allow for more parent

involvement and community building opportunities. I have also had many conversations with a variety of staff around the school about my research and my degree in general. From this, I have generated many ideas to utilize within the school and the community. There have also been a number of people who have reached out to me about opportunities within the school. Not only is this research beneficial for conversations at the school, but also for opening the conversation at home. Perhaps families that have participated in the survey now have conversations about the natural world at home or partake in more activities outdoors.

This research gave me an understanding on how connectedness to nature is related to relationship building through previous research on attachment theory (Brodie, n.d.) and socialization theory (Maccoby, 2007) which can be found in the literature review. Both of these theories suggest that a parent is the most influential figure for young children. According to Louv (2005), children's early experiences in nature influence a child's long-term comfort and respect for the natural world with comfort and respect being the concepts that are central to the study of parent-child attachment (p. 158). While I am not a parent to the children I work with, I am a trusted adult figure and have the ability to instill my environmental ethic with the children I work with. Project planning is a large component of my work. From the information reported on the Nature Experience Survey, I developed a sense of what kinds of activities families are doing at home to build relationships or a closer connection with nature. From the information I gathered from my research, I was able to generate ideas for projects to create, activities to plan or fun games to play. I have the ability to generate conversations based off of the reported

activities that may open the door for children to be more participatory or feel more comfortable during school time as it is something they can relate to at home.

Additionally, this research also helped me strengthen skills that will be useful in the future as both an educator, scholar and individual. Life is a continuous learning processes. This research process has benefited me immensely in writing, communication and conducting research. Writing is a lost art but such an important skill to have for life. I really enjoy writing so this was an excellent way to exercise a hobby of mine. Writing this paper was also useful in expanding my vocabulary and organizational methods. Another lifelong skill that this research helped strengthen was communication with my committee members, community members, coworkers, family and friends. Not only was I communicating with individuals involved in helping me with my research but I was communicating with individuals (mainly family and co-workers) about what my research was and why I was conducting it. It allowed myself to think freely and problem solve on my own. The process opened many doors for conversations amongst my peers and also the children I work with.

Lack of Diversity in my Research

The lack of diversity in responses caused me to think about race and environment which I found particularly interesting. The data collected in my survey shows 87.5% of participants were Caucasian and 6.3% were either Asian or more than 1 race. However, in the district it is reported that the population is 21% African American and 10% Hispanic. There was a question that came up upon this finding: Why didn't I have more participants of color in my survey?

Looking into this further, there are leisure constraints that are applicable to the general public (such as time and money) and there are leisure constraints that appear to be mediated by racial or ethnic group status (Stodolska et. al, 2014). These constraints include access to resources, immigration factors, and discrimination issues (Stodolska et. al, 2014). As this is a relatively new topic of study, researchers have yet to understand the complexity and multifaceted impact of these constraints. Populations with ethnically and racially diverse populations list access to resources as a constraint. This includes finances, transportation, crime or safety, and less attractive and maintained community infrastructure (Stodolska et. al, 2014). Immigration factors also play a role in leisure constraints such as transitional shock, language barriers, regaining economic stability, unfamiliar laws and regulations and a set of norms that conflict with new location (Stodolska et. al, 2014). Historically, the environment has been seen as being low on the list of priorities for low income communities as everyday necessities are more of a precedence (Birch, 2007, para 4). As referenced in the literature review, Birch (2007) states that, “a majority of environmental campaigns fail to tackle issues of inequality and social justice.”

My job is to help break these constraints and brainstorm ideas to come up with coping and negotiation strategies for these groups of diverse populations. Prior to this research, I did not really think about the topic of race and the environment. This research has opened my mind to the topic and has also made me re-evaluate what my role of educator is which I have found to be beneficial. It is easy to get wrapped up in the day, but it is also important to take time to evaluate what can be done to me a more efficient educator.

Limitations and Ineffective Research Strategies

A limiting factor was the language on the Connectedness to Nature Survey. Prior to the survey, I modified the language to make it more “kid friendly.” However, I did not field test this with children prior to the survey so I fear that children may have been confused and clicked a random answer to a question that was too wordy or that they did not understand. This, of course, would impact my data as far as accuracy goes. It is also hard to measure how honestly and thoroughly the children read through the questions.

An additional limitation was only doing electronic responses. Not every family has a computer or access to a computer; since my survey was online, this poses a problem. In hindsight, having paper surveys would have most likely would have yielded more results. While there was an option to have a paper copy, none of the families reached out to obtain one. Another coinciding limitation was that I found it challenging to communicate with families. I had to go through the school secretary to distribute the emails because of an online database that I do not have access to. I was able to compose the email and left my contact information if anyone had additional questions, but I felt very disconnected from my audience. Additionally, the low response rate acted as a limitation as I did not receive a lot of diversity within my results.

Future Research

This research produced a wealth of information. However, there is much to be explored and built upon within the topic of children’s connectedness to nature and parental involvement. I feel confident in the potential of future research because there is a similar study that was initiated by Tanner (1980) and pursued by several others (e.g., Chawla, 1990; Corcoran, 1999). Based on a random sample of middle school students in

North Carolina (USA), it was found that influential outdoor experiences as a child, adult role models, and reading nature books are all important factors that lead to an environmentally active adulthood (Stevenson et. al, 2014). I would like to expand my own research and add my work to support previous research before mine.

For starters, I would like to extend my research to include face-to-face interviews with children. As I mentioned previously, I think a child's perspective is very interesting and unique. It would be useful to have that face-to-face data to support this data set. I would also like to revisit these kids in 5 to 10 years to see if their connectedness to nature has changed or stayed the same. In that time frame they would also be at that age where they start exploring potential career options. I would be interested in distributing the survey again with the same set of kids. Comparatively, I would like the caretakers to participate in the CNS. I would also like to have a face-to-face interview with the caretakers. I would like to gather more information on race and ethnicity; I was really interested by my findings. More so, I am interested in learning more about what are some of the factors that affect different racially diverse groups on individuals and how to break through those barriers to allow the environment to be accessible by everyone. I would also like to look deeper into if connectedness to nature is a personality trait.

Reflection

When I started this process, I wanted to pick a topic that I am passionate about as well as something that is comprehensive, applicable to my future endeavors and beneficial for my students that I will work with. When I was younger I spent the majority of my time outside because the possibilities were endless. As a child, I was able to create, invent and imagine a different world and build relationships with those closest to me.

Richard Louv states in his book, *The Last Child in the Woods* (2005), that “nature presents the young with something so much greater than they are; it offers an environment where they can easily contemplate infinity and eternity” (p. 85). At a young age, I never would have imagined how those experiences would accumulate and contribute to the passions I have as an adult. Eventually, I was able to intertwine personal experiences into my education at college. I landed my dream internship in Santa Fe, New Mexico at the Santa Fe Botanical Garden. I was fortunate enough to work with a group of high school students to replant the garden at Georgia O’Keeffe’s home. That experience was a pivotal moment for me as I have never felt so rewarded from a job; thus, was born my passion for environmental education.

This capstone examined children’s connectedness to nature and parental involvement to gather information to help answer the question: *What are ways parents positively shape their children’s connectedness to nature?*

Using a modified version on the Connectedness to Nature Scale Survey, I found that children are able to recognize their connection and feelings with nature to some degree. This could be based on the relationships they have formed with their families through the attachment theory which was created by John Bowlby in the late 60’s. This is a theory that childhood development depends upon a child’s ability to form a strong relationship with at least one primary caregiver (Brodie, n.d., para 2). This strong attachment is necessary in forming a sense of security and stability. Children’s early experiences in nature influence a child’s long-term comfort and respect for the natural world with comfort and respect being the concepts that are central to the study of parent-child attachment (Louv, 2005, p. 158). This is something I can relate to.

This paper has given me the opportunity to reflect on my own upbringing and feelings towards nature and connection with my family. Growing up, I always felt connected to both my family and the natural world. Up until now, I never thought about whether or not the two were connected. Looking back, I am able to recall a handful of memories that occurred both in nature but also memories that occurred inside my childhood home on rainy days, after dinner, weekends and holidays. All of these experiences and moments shaped me into the person I am today.

Children are able to identify their positive relationship and feelings with nature based off of the nature experience. The nature experience occurs when perceived phenomena in nature form the significant content of an experience that may be otherwise known as an “ah-ha” experience (Morse, 2011). Each individual's experience is unique. According to Zylstra (2014), nature experiences can be “triggered through a physical encounter with wildlife or a more symbolic phenomena (patterns, signs, metaphor, and visions) perceived in nature (pg. 81).” As mentioned earlier I am able to recount numerous memories of my family and myself. I can remember rock hopping at Gooseberry State Park, camping with my grandma and grandpa in the Black Hills and seeing live buffalo, hiking along the North Shore, cutting myself with a butter knife camping and being caught in a tornado at Itasca State Park to name a few. The beauty of the nature experience is that as we grow older, we still experience these moments and they perhaps hold a bit more meaning. For instance, a recent trip to Yellowstone stands out as our family has grown from four to six. Although our family has grown up, I still felt like a child on the trip; skipping rocks across Yellowstone Lake, hiking in the Tetons, seeing wildlife, it was all so refreshing and helped us bond as a family. Another fairly

recent nature experience was a mother-daughter road trip to the Grand Canyon and through New Mexico. Sharing in the beauty of the natural world with my mom is a memory that I hold near to my heart and hope to share in with my future offspring.

The overall conclusion of this study is that parents play a role in shaping their children's connectedness to nature by demonstrating positive, working relationships with the members of their families. Caretakers also shape their children's connectedness to nature by simply introducing them to the outdoors and modeling positive behaviors. This research has opened many doors for future exploration on the topic of children's connectedness to nature and parental involvement.

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Appendix A

Connected to Nature Scale Survey Adapted from Mayer, F.S. & McPherson Frantz, C.

(2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of Environmental Psychology*, 24, 503-515. Reprinted with permission.

Item	strongly disagree	disagree	neutral	agree	strongly agree
I often feel a sense of oneness with the natural world around me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think of the natural world as a community to which I belong.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I recognize and appreciate the intelligence of other living organisms.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often feel disconnected from nature.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I think of my life, I imagine myself to be part of a larger cyclical process of living.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often feel a kinship with animals and plants.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel as though I belong to the Earth as equally as it belongs to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a deep understanding of how my actions affect the natural world.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often feel part of the web of life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that all inhabitants of Earth, human, and nonhuman, share a common "life force".	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Like a tree can be part of a forest, I feel embedded within the broader natural world.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I think of my place on Earth, I consider myself to be a top member of a hierarchy that exists in nature.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often feel like I am only a small part of the natural world around me, and that I am no more important than the grass on the ground or the birds in the trees.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My personal welfare is independent of the welfare of the natural world.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix B

Responses from the question, “people do outdoor activities for a number of reasons. List some reasons why you participate in outdoor activities.”

- To feel energized. To enjoy simple things.
- to get away from devices, etc., to enjoy each other's company, stay healthy, get fresh air
- It's beautiful, makes you smile, warm
- exercise, enjoyment
- Get some exercise away from technology.
- I enjoy being outside. Activity outside makes me feel more alive.
- It livens everyone up, keeps us connected , after we complete a hike we are excited about the accomplishment
- It's healthy, burn energy, fresh air, entertainment
- Unplug. No electronics allowed in the bwca. We choose a cabin w/o TV.
- to enjoy the outdoors and get away from the electronics
- To be outside
- Fresh air, vitamin D, beauty
- Recreation, spending family time together. Being active.
- Relax, enjoy outdoors, and get fresh air and sun.
- To enjoy the outdoor/warm weather; To release excess energy

- Because I know the emotional/psychological benefits of them and I really enjoy them.
- fresh air, burn energy, sunshine, family time
- burn energy, unplug, fresh air
- exercise, fresh air, connect with others
- Fresh air, burn energy
- Staying healthy, relaxing, getting fresh air
- Farmwork, hangout with family unplugged, more space to run, play and be loud and fresh air.
- It's a part of life. Feels good to be outside! We love doing things as a family!
- Love nature and the feeling of being outside.
- fresh air, vitamin D, fun, family time
- Exercise, social activity, exploration, relaxation, enjoyment
- Fresh air, exercise, family time
- Family time, fresh air, sunshine, unplug
- I like to be outdoors and to exercise. I always feel better afterward.
- Good exercises, away from screens
- exercise, to help our children stay healthy and active, fun
- Exercise, connection with nature, relaxation, connection with family & friends, service to others

Appendix C

Responses from the question, “What do you understand by the phrase "connected to nature”?”

- Being able to block out life and simply enjoy a bird chirping or a beautiful sky
- Feeling at one with being outdoors
- Feeling calm and content
- Not only physical but spiritual, socially, and emotionally aware of your surroundings and appreciation of where you live. Nature is everywhere and we can appreciate it even in an urban environment.
- Taking some time away from daily routine to look around at what is real. Stars, trees, dirt.
- Understanding that we are a part of this earth and what we do effects other living creature. We need nature to be healthy happy humans
- Desire to be outdoors and share wonderful memories together. There is always free wireless entertainment wherever we look - Beautiful rocks, flowers, insects, animals, landscapes, fresh air
- Sharing, observing and appreciating plants, the outdoors and creation (like sunsets).
- We need it to live. We need food to eat and feed animals etc. We need to nurture our nature and plant.
- You feel close to the nature around you.

- Being outdoors and enjoying nature like hiking or swimming.
- No electronics, just sitting and enjoying the scenery & sounds of the outdoors
- Being outside and being mindful of the surroundings and present in the moment.
- I think we feel life more deeply when we are outside, away from the distractions of electricity, gadgets, etc. and we connect to each other and to earth in a more thoughtful way.
- Having a "relationship" with nature. Taking in her beauty and giving back simply through our enjoyment in the outdoors by participating in activities.
- Connected to nature means you appreciate and advocate for nature because you understand the importance and benefits of it.
- aware of surroundings, feeling content and relaxed
- spending time outdoors
- Understanding of nature, unplugged, enjoy sights and sounds
- Feeling at peace and making a connection such as a relaxing feeling with nature
- Finding your inner-self, really being at peace and relaxed in and around nature.
- Understand nature? Utilizing nature appropriately?
- It is good for your mind, body, spirit.
- That you feel a part of nature and that your behavior impacts our natural world.
- Connected to nature means appreciating and enjoying the outdoors and all it has to offer. It's unique and personal to each individual.
- appreciation for the natural world, advocating for nature
- Utilizing nature appropriately, considering all non-human organisms as a part of the web

- Observing and appreciating the outdoors. Making an effort to get outside regularly.
- How is nature important to your life
- Being aware of the natural world (weather, trees, bodies of water etc.) and taking time to enjoy it.
- Being a part of it, caring for it, respecting & understanding it.

Appendix D

Responses to the question, “tell me a story of a favorite outdoor memory you have with your family.”

- For sure river rafting the Snake River in Jackson Hole. We declined the wetsuits in 50-degree water. We were freezing but kids were so adrenaline rushed they did not care!
- Canoeing down the St Croix River in Wisconsin
- When we have all been together at the backyard pool
- Too many to think of just one...we love being outside and we used to live in Oregon/Washington so camping was almost every weekend in summer.
- We just started an annual extended family camping weekend last summer.
- This last summer we went camping in the Blackhills. We hiked one day to little devil’s tower. Seeing the rock formations and amazing scenery was so awesome. At the very top we were actually climbing rocks. This was my kid’s favorite part of the whole hike. They thought going down was so much easier
- We were hiking Mount Washburn in Yellowstone National Park with our 5, 7, & 10 kids and it was cold, rainy, foggy and difficult! We turned one of the corners and there stood 4 big horn sheep! The beautiful alpine flowers also greeted us along the way. Everyone thought about giving up but we made it to the top lookout tower. We had a snack and used the toilets (woohoo) and headed back down the mount with ease, except that the 5-year-old fell asleep and we carried

him about 3/4 of the way down. Although it was hard we all agreed we would do it again in a heartbeat!

- My favorite memories are playing in the backyard sprinkler and having water balloon fights in the summer.
- It would be our trips into the boundary waters. We also have taken yearly trips to the Caribbean. St. Lucia was most memorable as we did numerous off the beaten path adventures. They have an inactive volcano. Mud baths, etc.
- Every summer we rent a cabin and spend many hours fishing all week.
- Camping as a family
- Riding 4 wheelers in the rain & mud
- Sitting on the dick, watching the kids playing in the water.
- We had just moved into our new house, and we live at the top of a very large hill with a VERY steep driveway. We had just started family bike rides after dinner on weeknights. Our youngest two girls get the benefit of riding on Daddy's bike - one on a seat in the front, and one on a tandem attachment on the back. However, the oldest is on her own! For the first two nights, she ended up stopping halfway up the hill and walking her bike up. On the third night, her sisters cheered her from the top of the hill, "You can do it! You can do it!" and she made it all the way to the top without giving up! Now, she makes it up every time.
- Picnics at the park
- My family went camping and it happened to be my aunt and uncle's anniversary but my uncle forgot about it so we had an impromptu vow renewal. I officiated,

the flower girl threw lettuce, the alter was an umbrella and the bouquets were made out of weeds.

- Lots of trips to the cabin!
- Snow forts in the backyards with my kids! I have 4 children; my youngest is 4 and my oldest is 10. Forts are about the only activity they all agree on!
- Rock hoping in Gooseberry Falls, family camping trip to Yellowstone
- Camping family reunions
- Summer camping trip, we have gone to MI every summer since I can remember.
- Trail riding with family during the fall at Maplewood state park. Baking hay or fencing with my husband and boys.
- Every week we create new favorite memories. This week we went sledding during the snow storm!
- Camping
- We have a family cabin up north and teaching our kids how to waterski has to up there as a favorite. Our younger boy is 10 and was the last of the cousins to learn. All of them were packed in the boat and nobody else was out on the lake that morning. When he finally got up and didn't fall, the cheers could be heard across the water.
- We love to ride our bikes around Lake Harriet, Calhoun and Isles together as a family every week in the summer. It's a tradition we love and cherish.
- We took a road trip to the Black Hills a few years ago. We had a great time hiking, camping, exploring and spending time as a family. It was hotter than heck but the kids had good spirits!

- We converted an old van into a traveling camper. Many, many memories of road trips and camping
- Hiking in the Black Hills last summer. My daughter thought she couldn't complete the 7-mile hike, but she did it. We were proud of her.
- Being at the beach riding waves
- On Thanksgiving about 2 years ago we had the whole day free together. There was snow on the ground so we all (2 parents, 3 kids) played a version of "capture the flag" that involved snowballs. I also have many fond memories of swimming together at our local pool.
- Creating a beautiful garden at our house in TUCSON

